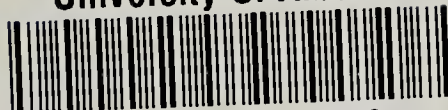


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Blue Jay

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Willow Ptarmigan

Photo by J. G. Beatty, Gunnar Mines

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BLUE JAY CHATTER

This issue marks the beginning of the nineteenth volume of the **Blue Jay**. During these past nineteen years there have been many changes. It is interesting to remember the very modest beginning in 1942 when the membership was 25 cents per year. For nine years the **Blue Jay** was mimeographed and many were the "bees" when members joined in colouring the cover page, mimeographing, collating, stapling, or mailing the **Blue Jay**. Those good old days are not entirely gone for a recent "bee" in Regina, handsomely fed with coffee and cakes by our new treasurer, Mrs. Grace Steele, sent out over 1600 postcards to people who had not yet sent in their membership for 1961. To get this issue in the mails a "bee" in Saskatoon will put the address labels on the **Blue Jay**.

It is important that there be some talk of the past so that new members will know that the society has always been a co-operative venture, sharing work as well as experiences and interests. Each new member shares with the rest of us responsibility for the success of the society and pride in its achievements. Though we cannot all publish articles in the **Blue Jay** we can all talk to others about our natural history interests. One of the main aims of the **Blue Jay** is to develop a true appreciation of our natural resources.

We always devote some pages of the **Blue Jay** to young people. You will notice that with this issue the section edited by Joyce Dew has a new name, **Junior Naturalists**. To interest young people in natural history is important: many of our best Saskatchewan naturalists started out as readers and contributors to the **Blue Jay**.

With this issue we are starting a new section directed to senior students. This section will be of special interest to High School students but many of the more serious Public School students will find much of interest in it too. The first of the series is written by Dr. T. Steeves, Professor of Biology, University of Saskatchewan, and his assistant, Miss Maureen Rever. It is hoped that High School teachers will find many useful classroom suggestions and will see that each **Blue Jay** is carefully saved in the school library.

The publication of an index to the first 18 volumes of the **Blue Jay** is being considered. Once there is an index, complete sets of the **Blue Jay** will have increased value for anyone writing on any aspect of Saskatchewan natural history. Since early volumes are rare, it will be difficult for individuals to acquire complete sets but perhaps each local society could make it a special project to see that there is a complete set (bound) in the local library.

The saddest thing about the passing of time and the changes that it brings is the loss of friends. Readers of the **Blue Jay**, as well as the Editor, will miss the name and the contributions of Mr. A. C. Budd. It is characteristic of the thoughtfulness of Mr. Budd that he had been coaching Mr. Keith Best to take his place. We sincerely hope that the series of articles contributed so faithfully from Swift Current will be continued by Mr. Best in future issues. This will be a most fitting memorial to Archie Budd.

Preparing this issue of the **Blue Jay** has been a very difficult job for your Editor. There was much more material than could be used. In making a selection from this material consideration was given to balancing different sections, and so we have long and important articles on birds, plants and archaeology. This issue has 56 pages, the biggest **Blue Jay** ever printed, but if this size is to continue we will need more members. If you have received this issue you have paid for 1961. If you know of anyone who has not received this issue remind him to send his membership, or take the money for him and send it in to the treasurer, Mrs. Grace Steele, 3603 Caen Avenue, or to our membership chairman, Miss Sylvia Harrison, 6 Claire Apts., Regina.

The Blue Jay

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Buffalo Rock

by **Ona Lacy Hunter**, Springfield, Missouri



Eye-catching on the undulating prairie of our homestead situated three miles north-west of Ruthilda, Saskatchewan, was an enormous white rock, known by all the old-timers as Buffalo Rock. Being near the main road, it served as a signpost for passers-by. We were proud of the unique distinction it gave to our homestead, so we named the place Buffalo Rock Farm.

I saw the rock—bleak and lonely as a cast-off friend—for the last time in 1920 when we were moving away. But I am sure it must still be in the same place today, for it weighed tons and what appeared to be a third of it was buried in the ground. I have seen five men sitting on its top at one time, and there was still room for at least two more.

Judging from the smooth-ground smaller rock nearby, as well as this giant one, they were left here by a melting glacier ages ago.

Old settlers told us that the rock got its name from the fact that buffaloes ranging the prairies in a not far-distant past would stop here to rub against the rock. In milling round and round it, their hoofs made a deep-rutted path, the imprint of which was still visible when I first visited the rock.

Not only did this rock make an interesting landmark, breaking the treeless monotony of the prairie, but

to me it was a sort of monument to that bygone time before the white man invaded this part of Saskatchewan.

I loved to come to this rock, to lean against it and watch a gorgeous sunset or sunrise, and feel I was a mere speck in the immensity of space stretching away in every direction. This solid rock was something tangible for me to cling to in my strange new world as a homesteader's wife when loneliness tried to engulf me. If it could break its brooding silence what tales it might tell of roving Indians and buffalo hunters. Mute evidence of the past was the number of buffalo skulls which dotted our place.

Some moonlit night, when in a dreamy mood, I'd slip away to Buffalo Rock and from its top, watch and listen while a coyote on a knoll not far away sat and seemed to howl at the man-in-the-moon. Usually when our dog, Shep, heard the coyote's weird howls he would howl back in answer.

Although owners of our one-time homestead come and go, I have a feeling Buffalo Rock still broods over the land, majestic and silent as the Sphinx, while I, in nostalgic imagination, lean against its side, smelling wild roses and watching a carolling meadowlark wing into a summer sky "blue as an ocean's main".

Saskatchewan Christmas Bird Count, 1960

Edited by Mary Houston, Saskatoon

The highlight of the nineteenth annual Christmas bird count was the Cardinal spotted at Craven by Gary Anweiler and Frank Brazier. This bird was collected later that day to become the first specimen for the province—and the 311th specimen to be definitely identified in Saskatchewan. It also was one of six new species to be added to the 99 species previously observed in Saskatchewan in the Christmas season. The other new species were a Hooded Merganser at Estevan, Redheads at Fort Qu'Appelle, a Brown Thrasher at Saskatoon, and Townsend's Solitaire and Bufflehead at Regina.

The energetic Regina group covered 145 miles on foot and 296 miles by car to set a new record of 34 species seen within a 7½ mile radius on one day, and an additional 9 species seen on others days in the Christmas season. Formal counts were taken at an all-time high of 34 localities (compared to 30 in both 1958 and 1959). In turn, a record 63 species were seen during the day of the count and 9 others during the 10-day Christmas season. A total of 161 persons participated.

As usual, the magpie was reported from every locality. Bohemian Waxwings were well distributed, but redpolls were less common than usual. Altogether, Golden Eagles were reported from 12 localities and the Short-eared Owl from 11 localities, both species being more common than usual. On the other hand, Snowy Owls were uncommon for the third successive year, being seen at only 5 localities. Goshawks were only seen once! The unusually warm weather was likely responsible for mallards being reported from eight localities and robins and crows from five each.

BANGOR, Sask. Jan 5; about the yard and 14 miles by car; calm, sunny. 9 species, 408 individuals. Ruffed Grouse, 3; Sharp-tailed Grouse, 3; Hairy Woodpecker, 1; Downy Woodpecker, 2; Black-billed Magpie, 2; Black-capped Chickadee, 6; House Sparrow, 78; Pine Grosbeak, 13; Snow Bunting, 300. (Add: Redpolls).—**Mrs. A. Thomson.**

BATTLEFORD, Sask. Dec. 26; 11 miles by car and 4 miles on foot, in 7¼ hours; temp. 2°; wind 20 mph; cloudy with snow falling; 12 inches of snow. 21 species, 4,537 individuals. Golden Eagle, 2; Pigeon Hawk, 1; Ruffed Grouse, 17; Sharp-tailed Grouse, 4; Ring-necked Pheasant, 1; Gray Partridge, 17; Rock Dove, 113; Great Horned Owl, 6; Short-eared Owl, 1; Hairy Woodpecker, 2; Downy Woodpecker, 2; Black-billed Magpie, 24; Common Crow, 1; Black-capped Chickadee, 24; Robin, 1; Bohemian Waxwing, 673; Starling, 17; House Sparrow, 273; Pine Grosbeak, 18; Common Redpoll, 40; Snow Bunting, 3,000. (Add: Saw-whet Owl, 1, Jan. 2).—**Spencer Sealy.**

BLADWORTH, Sask. Dec. 23; 4 hours by truck and 1½ hours on foot; temp. 15° to 28°; wind W.N.W. 5-15 mph; clear; 4 inches of snow. 7 species, 599 individuals. Sharp-tailed Grouse, 48; Gray Partridge, 25; Great Horned Owl, 1; Black-billed Magpie, 6; Northern Shrike, 1; House Sparrow, 127; Snow Bunting, 391 (Add: Golden Eagle, 1, Dec. 28; Short-eared Owl, 2, Dec. 28; Horned Lark, 1, Dec. 24, and 8, Dec. 29; Common Redpoll, Dec. 22, 24, 28 and 31).—**Gerald, Lawrence and Sam Beckie.**

BROADVIEW, Sask. Dec. 28; 59 miles by car in 3½ hours; temp. 0; calm, sunny. 11 species, 1293 individuals. Sharp-tailed Grouse, 7; Hawk-Owl, 1 (no details — Ed.); Black-billed Magpie, 1; Black-capped Chickadee, 3; Bohemian Waxwing, 36; House Sparrow, 4; Pine Grosbeak, 1; Hoary Redpoll, 2; Common Redpoll, 38; Snow Bunting, 1200. (Add: Golden Eagle, 2, Dec. 29; Ruffed Grouse, 4, Dec. 27; Great Horned Owl, 1, Dec. 27; Hairy Woodpecker, 2, Dec. 27).—**Audrey and Charles Thacker.**

CRAVEN, Sask. Dec. 29; 8 hours; 5 inches snow on ground. 21 species, 1633 individuals. Golden Eagle, 1 (?); Ruffed Grouse, 10; Sharp-tailed Grouse, 2; Ring-necked Pheasant, 1; Gray Partridge, 10; Rock Dove, 25; Great Horned Owl, 4; Snowy Owl, 1; Short-eared Owl, 2; Hairy Woodpecker, 3; Downy Woodpecker, 5;

Black-billed Magpie, 118; Black-capped Chickadee, 66; Robin, 22; Bohemian Waxwing, 528; House Sparrow, 500; Cardinal, 1; Pine Grosbeak, 30; Common Redpoll, 82; Tree Sparrow, 2; Snow Bunting, 250.

—**Gary Anweiler, Frank Brazier (compiler), William Fleming, Elmer Fox, Bernard Nelson, Robert Nero, Rickey Sanderson, Albert Swanston, Alan Wade, Dorothy Wade, Douglas Wade.**

DILKE, Sask. Dec. 25; 2 miles in 3 hours on foot and by team and horseback about yards and fields, and 57 miles in 3½ hours by car; temp. 15° to 32°; wind N. 30-35 mph; overcast; 7 inches drifted snow. 9 species, 479 individuals. Prairie Falcon, 1; Sharp-tailed Grouse, 6; Gray Partridge, 39; Rock Dove, 7; Great Horned Owl, 2; Black-billed Magpie, 7; Bohemian Waxwing, 28; House Sparrow, 89; Snow Bunting, 300. (Add: Pigeon Hawk, Dec. 28; Northern Shrike, Dec. 31; Lapland Longspur, Dec. 30).—**J. B. Belcher (compiler), Margaret Belcher, Mr. and Mrs. S. R. Belcher.**

DUBUC, Sask. Dec. 28; 9 species, 74 individuals. Ruffed Grouse, 1; Great Horned Owl, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Black-billed Magpie, 5; Black-capped Chickadee, 11; Bohemian Waxwing, 3; House Sparrow, 50; Snow Bunting, 1. (Add: Golden Eagle, 2, Dec. 22; Sharp-tailed Grouse, 3, Dec. 23, and 7, Dec. 25; Pine Grosbeak, 5, Dec. 31; Common Redpoll, 1, Dec. 31).—**George Chopping.**

ESTEVAN, Sask. Dec. 30; 11 miles by foot in 3½ hours; temp. 20°; wind N.W. 20 mph; 7 inches of snow. 15 species, 425 individuals. Mallard, 26; Hooded Merganser, 3; Common Merganser, 1; Rock Dove, 7; Great Horned Owl, 1; Short-eared Owl, 6; Black-billed Magpie, 10; Black-capped Chickadee, 2; Bohemian Waxwing, 153; Starling, 1; House Sparrow, 153; Pine Grosbeak, 50; Common Redpoll, 10; Pine Siskin, 1; Snow Bunting, 1. (Add: Ring-necked Pheasant, 3; Hairy Woodpecker, 1; Downy Woodpecker, 1, all on Dec. 24).—**Darrel Carlson, Ross Lein (compiler).**

FORT QU'APPELLE, Sask. Dec. 25; 25 miles by car in 3½ hours; temp. 27°; cloudy; calm; 6 inches of snow where not melted. 15 species, 333 individuals. Mallard, 2; American Widgeon, 1; Redhead, 2; Common

Merganser, 1; Golden Eagle, 1; Short-eared Owl, 2; Downy Woodpecker, 2; Blue Jay, 3; Black-billed Magpie, 5; Black-capped Chickadee, 10; Robin, 2; Bohemian Waxwing, 250; Northern Shrike, 1; House Sparrow, 50; Pine Grosbeak, 1. (Add: Ruffed Grouse, 2, Dec. 27; Sharp-tailed Grouse, 2, Dec. 26; Gray Partridge, 4, Dec. 24; Rock Dove, 6, Jan. 1; Hairy Woodpecker, 2, Dec. 26; Starling, 6, Dec. 22; Evening Grosbeak, 2, Dec. 24; Common Redpoll, 11, Dec. 24; Snow Bunting, 25, Dec. 27).—**Alden Barnett, Dr. G. D. Barnett, E. M. Callin (compiler), E. Cochrane, Mr. and Mrs. B. deVries, S. Harrison, F. Hudell, H. Jennings, J. Lowe, R. A. Nevard, S. P. Regan.**

FOXFORD, Sask. Dec. 29; 3 miles in 1½ hours on foot; temp. 23°; wind 8 mph developing into a snowstorm; 8 inches of snow. 5 species, 35 individuals. Goshawk, 1; Downy Woodpecker, 1; Black-billed Magpie, 1; Black-capped Chickadee, 2; Snow Bunting, 30. (Add: Sharp-tailed Grouse, 4, Dec. 30; Raven, 2, Dec. 25).—**Tom Bird.**

GRENFELL, Sask. Jan 2; 2½ miles on foot in 1½ hours; temp. 6°; wind light; overcast with a little snow; 6-8 inches of snow. 3 species; 82 individuals. Black-billed Magpie, 1; Black-capped Chickadee, 6; House Sparrow, 75. (Add: Sharp-tailed grouse, 8, Dec. 30; Hairy Woodpecker, 1, Dec. 29; Bohemian Waxwing, 14, Dec. 30; Pine Grosbeak, 3, Dec. 28).—**Mrs. John Hubbard.**

HAWARDEN, Sask. Dec. 30; 20 miles by car and on foot in 6 hours; temp. 25°; wind S.W. light; 4 inches of snow. 5 species, 1008 individuals. Horned Lark, 6; Black-billed Magpie, 1; Northern Shrike, 1; House Sparrow, 200; Snow Bunting, 800. (Add: Gray Partridge, 14, Dec. 27; Snowy Owl, 1, Dec. 24; Bohemian Waxwing, 15, Dec. 25).—**Harold Kvinge.**

HIGH HILL-ROUND LAKE, Sask. Dec. 28; 7 miles on foot through heavy bush and farm land in 7 hours; temp. 12°; light wind; dull with some fog. 8 species, 87 individuals. Ruffed Grouse, 2; Hairy Woodpecker, 1; Black-billed Magpie, 3; Raven, 2; Black-capped Chickadee, 6; White-breasted Nuthatch, 1; Pine Grosbeak, 2. (Add: Downy Woodpecker, 1, Dec. 26; Evening Grosbeak, 1, Dec. 21).—**Steve Waycheshen.**

KEATLEY, Sask. Dec. 23; 25 miles by truck and 5 miles on foot; mild calm; 6 inches of snow. 9 species, 633 individuals. Ruffed Grouse, 1; Sharp-tailed Grouse, 17; Black-billed Magpie, 9; Black-capped Chickadee, 2; Bohemian Waxwing, 22; House Sparrow, 45; Pine Grosbeak, 5; Common Redpoll, 32; Snow Bunting, 500. (Add: Great Horned Owl, 2, Jan. 1; Common Crow, 1, Dec. 27).—**A. P. Pym.**

KELVINGTON, Sask. Dec. 24. 6 species, 193 individuals. Ruffed Grouse, 1; Downy Woodpecker, 1; Black-billed Magpie, 1; Black-capped Chickadee, 10; Bohemian Waxwing, 30; House Sparrow, 150. (Add: Sharp-tailed Grouse, 3, Dec. 23; Pine Grosbeak, 6, Dec. 28, and 11, Dec. 30; Snow Bunting, 500, Dec. 22, and 30, Dec. 25).—**Brian Irving.**

KINDERSLEY, Sask. Dec. 26; 5 miles on foot in 4 hours; temp. 8°; wind S.E. 15 mph. 8 species, 800 individuals. Sharp-tailed Grouse, 1; Gray Partridge, 70; Rock Dove, 118; Short-eared Owl, 2; Black-billed Magpie, 4; Bohemian Waxwing, 20; Starling, 6; House Sparrow, 579. (Add: Golden Eagle, 1, Dec. 22; Snowy Owl, 1, Dec. 22; Snow Bunting, 500, Dec. 29).—**Glen A. Fox.**

LEADER, Sask. Dec. 31; 12 miles in 1½ hours by car and 2½ hours afield on foot; temp. 20°; calm, cloudy; 12 inches of snow. 5 species, 123 individuals. Ring-necked Pheasant, 25; Gray Partridge, 26; Rock Dove, 1; Black-billed Magpie, 8; House Sparrow, 63.—**Daisy Myers.**

McLEAN, Sask. Dec. 29; seen around the yard; temp. 30°; wind light, westerly; 10 inches of snow. 5 species, 24 individuals. Hairy Woodpecker, 2; Downy Woodpecker, 2; Black-billed Magpie, 2; Black-capped Chickadee, 10; Pine Grosbeak, 8. (Add: Gray Jay, 1; Bohemian Waxwing, 75; House Sparrow, 8; Snow Bunting, 10).—**Mrs. Harold Bray, Mrs. Hilda Newton.**

MARQUIS, Sask. Dec. 25. Western Meadowlark.—**Mrs. Leo Fitzpatrick.**

MASEFIELD, Sask. Dec. 30; 35 miles by truck and 3 on foot along Frenchman River; temp. 28°; overcast-clearing; calm; 16 inches of snow. 9 species, 271 individuals. Mallard, 1; Ring-necked Pheasant, 8; Gray Partridge, 10; Hawk-Owl, 2 (no details, Ed.); Horned Lark, 14; Black-billed

Magpie, 4; House Sparrow, 80; Pine Grosbeak, 2; Snow Bunting, 150. (Add: Golden Eagle, 1, Dec. 28).—**J. David Chandler.**

MELVILLE, Sask. Dec. 25; 8 miles on foot; wind 10 mph; 6 inches of snow. 5 species, 73 individuals. Great Horned Owl, 1; Downy Woodpecker, 1; Black-billed Magpie, 9; Black-capped Chickadee, 12; House Sparrow, 50. (Add: Short-eared Owl, 1, Dec. 29; Horned Lark, 2, Dec. 29; Common Redpoll, Dec. 27).—**Gary Anweiler, Victor Schmidt.**

MOOSE JAW, Sask. Dec. 27; 109 miles, 17½ party hours; temp. 15°; calm, sunny. 15 species, 552 individuals. Ring-necked Pheasant, 2; Gray Partridge, 13; Snowy Owl, 1; Short-eared Owl, 1; Downy Woodpecker, 3; Black-billed Magpie, 25; Black-capped Chickadee, 4; Thrush (?), 1; Bohemian Waxwing, 94; Starling, 100; House Sparrow, 119; Pine Grosbeak, 10; Common Redpoll, 75; Slate-colored Junco, 4; Snow Bunting, 100. (Add Dec. 31: Peregrine Falcon, 1; Yellow-shafted Flicker, 1; Hairy Woodpecker, 1; Western Meadowlark, 1).—**Sylvia Curtis, Carl Ellis, Alice Ellis, John Ellis, Mary Jane Ellis, McLaren Ewart, Dr. and Mrs. D. M. Ewart, Patty Ewart, Barry Green, Mrs. N. Greenwood, Frank Hill, J. Horton, Mrs. Vesta Humphries, Mrs. Cy Knight, Mr. and Mrs. Dick Lillico, Michel Lillico, J. H. Monson (compiler), Gordon Morley, Don Peden, Mrs. Anne Pugh, M. Riome, Molly Ritchie, Mrs. Dorothy Rhodes, Michael Rhodes, Mrs. Clarence West, B. Whittaker (Moose Jaw Natural History Society).**

PRINCE ALBERT, Sask. Dec. 29; 7 miles on foot in 5 hours; temp. 5° to 20°; overcast, snowing in the afternoon; 20 inches of snow. 18 species, 148 individuals. Mallard, 3; Common Goldeneye, 2; Ruffed Grouse, 1; Rock Dove, 23; Gray Jay, 1; Blue Jay, 1; Black-billed Magpie, 1; Black-capped Chickadee, 6; Boreal Chickadee, 20; Red-breasted Nuthatch, 1; Bohemian Waxwing, 1; House Sparrow, 14; Evening Grosbeak, 35; Pine Grosbeak, 3; Hoary Redpoll, 1; Common Redpoll, 11; Red Crossbill, 5; White-winged Crossbill, 19. (Add: Downy Woodpecker, 1, Dec. 27; Common Raven, 1, Dec. 27).—**Don Karasiuk.**

REGINA, Sask. Dec. 26; 145 party miles on foot and 296 party miles by

car in a 9 hour period; temp. 2° to 6° wind E.S.E. at 10 mph; sunshine in afternoon; 3 inches of snow. 34 species, 4321 individuals. Horned Grebe, 1; Mute Swan, 6; Whistling Swan, 7; Canada Goose, 147; Mallard, 303; Pintail, 3; American Widgeon, 3; Lesser Scaup, 1; Pigeon Hawk, 1; Ruffed Grouse, 2; Sharp-tailed Grouse, 25; Ring-necked Pheasant, 17; American Coot, 1; Rock Dove, 430; Great Horned Owl, 5; Snowy Owl, 3; Short-eared Owl, 10; Hairy Woodpecker, 2; Downy Woodpecker, 6; Black-billed Magpie, 28; Common Crow, 1; Black-capped Chickadee, 40; Townsend's Solitaire, 1; Bohemian Waxwing, 500; Northern Shrike, 2; House Sparrow, 2533; Evening Grosbeak, 1; Pine Grosbeak, 30; Common Redpoll, 73; Pine Siskin, 3; Red Crossbill, 1; White-winged Crossbill, 3; Song Sparrow, 1; Snow Bunting, 133. (Add: Pied-billed Grebe, 1; Common Goldeneye, 1; Bufflehead, 1; Prairie Falcon, 2; Gray Partridge, 10; Starling, 7; Rusty Blackbird, 2; Common Grackle, 1; Slate-colored Junco, 1).—**Jessie Bailey, Margaret Belcher, Frank Brazier, Isabel Coleman, Elizabeth Cruikshank, George Dodd, Bill Fleming, Elmer Fox, Tom Gentles, Doug Gilroy, Marian Goudy, Marjory Harrison, Walter Knudson, Marjorie Ledingham, George Ledingham, Bob McCall, Helen McGillivray, Robert Nero, Elizabeth Parkin, Maureen Rever, Rickey Sanderson, Gert-rude Smith, Alan Wade, Douglas Wade (compiler), Dorothy Wade, Don Westlund, Vic Wilshire (Members and friends of the Regina Natural History Society).**

RIVERHURST, Sask. Dec. 29; 2 miles on foot and 2 miles by car; temp. 22°; overcast; calm. 8 species, 133 individuals. Mallard, 8; Golden Eagle, 3; Downy Woodpecker, 2; Black-billed Magpie, 11; Black-capped Chickadee, 20; Bohemian Waxwing, 50; Pine Grosbeak, 15; Snow Bunting, 25.—**Mr. and Mrs. G. E. Dew and Joyce Dew.**

SASKATOON, Sask. Dec. 26; 19½ party miles on foot in 12½ hours, 257 party miles by car in 24 hours; temp. —1°; wind E. at 8 mph; light snow, clearing by 10.00, cloudy to overcast by 3.00; 4 inches of snow. 24 species, 7,194 individuals. Mallard, 3; Common Goldeneye, 2; Pigeon Hawk, 1; Ruffed Grouse, 2; Sharp-tailed Grouse, 24; Ring-necked Pheasant,

6; Gray Partridge, 12; Rock Dove, 277; Great Horned Owl, 1; Short-eared Owl, 8; Downy Woodpecker, 3; Blue Jay, 4; Black-billed Magpie, 132; Black-capped Chickadee, 31; Red-breasted Nuthatch, 2; Brown Thrasher, 1; Bohemian Waxwing, 2812; Cedar Waxwing, 13; Starling, 22; House Sparrow, 2474; Pine Grosbeak, 113; Hoary Redpoll, 3; Common Redpoll, 228; Snow Bunting, 1,000. (Add: Robin, 1, Dec. 29; Northern Shrike, 1, Dec. 25; Bronzed Grackle, 1, Dec. 22.)—**A. Binnie, B. Binnie, Pern Cordery, Carol Dahlen, R. Folker, Dr. and Mrs. J. Gerrard, Jonathan Gerrard, G. Gerrity, B. Gollop, Mrs. M. Gollop, Vi Harper, J. D. Hogg, Dr. and Mrs. Stuart Houston, Dr. and Mrs. C. J. L'Ami, Jean MacKenzie, Bob Mills, T. Ortynski, J. F. Roy (compiler), J. Shadick, Lindy Wedge, Terry Wedge, Wendy Wedge, Mr. and Mrs. Ted Wedge.**

SHAUNAVON, Sask. Dec. 23; 5 miles on foot along White Mud River and 55 miles by car; temp. 40°; sunny; 12 inches of snow. 10 species, 362 individuals. Golden Eagle, 1; Sharp-tailed Grouse, 3; Ring-necked Pheasant, 3; Long-eared Owl, 2; Black-billed Magpie, 9; Common Crow, 1; Bohemian Waxwing, 2; Starling, 2; House Sparrow, 336; Snow Bunting, 3.—**Douglas Young.**

SKULL CREEK, Sask. Dec. 29; temp. 26°; light wind. 23 species, 732 individuals. Golden Eagle, 3; Sharp-tailed Grouse, 42; Ring-necked Pheasant, 4; Gray Partridge, 19; Great Horned Owl, 6; Short-eared Owl, 1; Yellow-shafted Flicker, 1; Downy Woodpecker, 5; Horned Lark, 1; Blue Jay, 1; Black-billed Magpie, 58; Black-capped Chickadee, 37; Robin, 1; Bohemian Waxwing, 161; Northern Shrike, 1; House Sparrow, 217; Red-winged Blackbird, 1; Brewer's Blackbird, 2; Evening Grosbeak, 7; Pine Grosbeak, 77; Common Redpoll, 64; Tree Sparrow, 2; Snow Bunting, 21. (Add: Mallard, 25, Dec. 30; Rough-legged Hawk, 1, Dec. 27; Prairie Falcon, 1, Dec. 20; Hairy Woodpecker, 1, Dec. 31; Common Crow, 1, Jan. 1.)—**Mrs. Lena Bennetto, Stanley Birchall, Mrs. Borman, Mr. and Mrs. Robert Mann, Mr. and Mrs. Steve Mann (compilers), Peter Swain, Harry Williams.**

SPIRIT LAKE, Sask. Dec. 23; 6 miles in 7 hours; temp. 35°; strong wind; mild; 6 inches of snow. 12 species,

209 individuals. Ruffed Grouse, 1; Hairy Woodpecker, 5; Downy Woodpecker, 7; Black-billed Magpie, 6; Black-capped Chickadee, 55; White-breasted Nuthatch, 2; Bohemian Waxwing, 16; House Sparrow, 42; Evening Grosbeak, 4; Pine Grosbeak, 1; Common Redpoll, 65; Snow Bunting, 5. (Add: Sharp-tailed Grouse, 8, Dec. 31; Great Horned Owl, 2, Dec. 28.)—**Bill Anaka, Joyce Gunn.**

STAR CITY, Sask. Dec. 27; 2 miles on foot in 3 hours; temp. 25°; wind SW 8 mph; partly cloudy; 15 inches of snow on ground. 7 species, 108 individuals. Sharp-tailed Grouse, 20; Hairy Woodpecker, 1; Blue Jay, 5; Black-billed Magpie, 1; Black-capped Chickadee, 1; House Sparrow, 30; Snow Bunting, 50. (Add: Snowy Owl, 1, Dec. 21; Downy Woodpecker, 1, Jan. 1.)—**David and Wesley Grant.**

STORNOWAY, Sask. Dec. 27; temp. 0°; NW wind. 9 species, 79 individuals. Ruffed Grouse, 1; Sharp-tailed Grouse, 26; Downy Woodpecker, 1; Black-billed Magpie, 3; Black-capped Chickadee, 3; Bohemian Waxwing, 7; Evening Grosbeak, 3; Pine Grosbeak, 10; Snow Bunting, 25. (Add: Goshawk, 1, Dec. 24, 25; Great Horned Owl, 1, Dec. 24; Hairy Woodpecker, 1, Dec. 31; Northern Shrike,

1, Dec. 25; Common Redpoll, 4, Dec. 21.)—**Stanley Zazelenchuk.**

STRUAN, Sask. Dec. 23; 10 miles on foot; temp. 30°; wind NW 20 mph; clear; 4 inches of snow. 8 species, 112 individuals. Ruffed Grouse, 1; Gray Partridge, 15; Rock Dove, 3; Downy Woodpecker, 1; Black-billed Magpie, 11; Black-capped Chickadee, 2; Bohemian Waxwing, 24; House Sparrow, 55. (Add: Snow Bunting, 200, Dec. 27.)—**Wm. E. Jasper.**

SWIFT CURRENT, Sask. Dec. 29; 30 miles by car and on foot in 8 hours; 11 species, 384 individuals. Golden Eagle, 2; Gyrfalcon (?) 1; Sharp-tailed Grouse, 18; Ring-necked Pheasant, 4; Gray Partridge, 10; Rock Dove, 15; Black-billed Magpie, 20; Bohemian Waxwing, 41; Starling, 1; House Sparrow, 224; Pine Grosbeak, 48.—**Bill Adkins, Richard Bennett, Wm. Berezowski, Carl Ellis, Fred Dick, Mrs. R. S. Hare (compiler), Sheila McIntosh, Norman Watson.**

WOODROW, Sask. Dec. 27; 20 miles by car and 1 mile on foot; temp 20°; wind W at 20 mph. 7 species; 2554 individuals. Ring-necked Pheasant, 4; Gray Partridge, 40; Rock Dove, 4; Horned Lark, 1; Black-billed Magpie, 4; House Sparrow, 2500; Blackbird (sp?) 1.—**Fred C. Parchman.**

DO YOU KNOW THIS OWL?

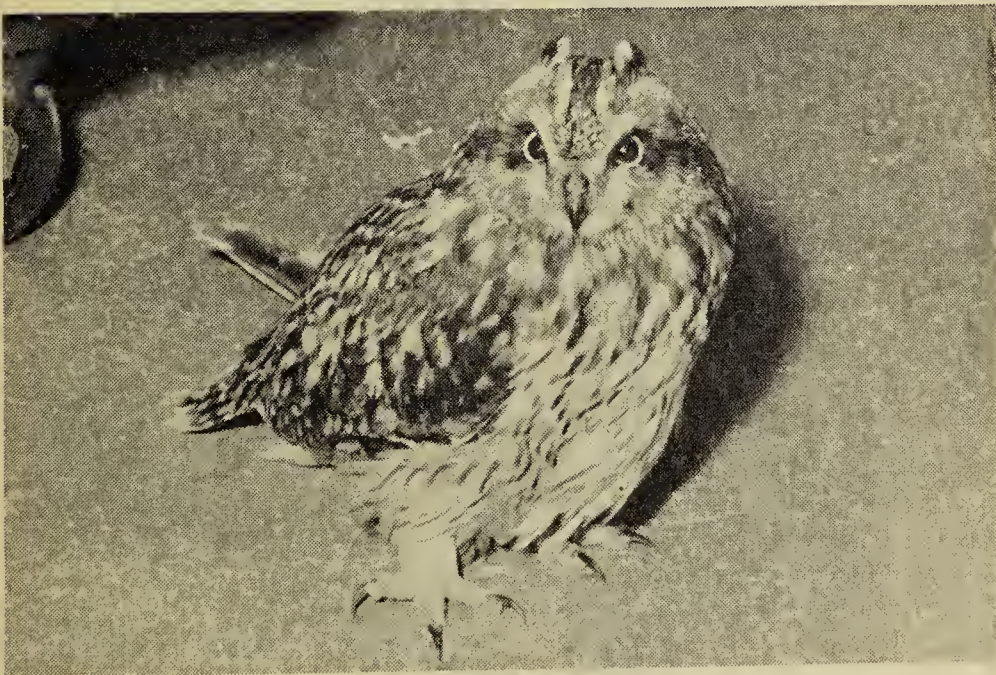


Photo by F. W. Lahrman

In spite of its conspicuous ears, this is the Short-eared Owl. Observed in this pose it sometimes confuses the novice, who reports seeing a "long-eared" owl.

After a prolific breeding season, Short-ears were unusually common in the late fall of 1960. Mrs. K. D. Paton reported numerous Short-ears flying over the stubble fields at Oxbow, and they were reported from 11 localities on the 1960 Christmas count. Our last report before going to press was of two seen in the Qu'Appelle Valley north of Regina, January 22, 1961, by Lucy Murray and Elizabeth Cruickshank.

The Problem of the Lesser Sandhill Crane

by Lawrence H. Walkinshaw, Battle Creek, Michigan.

Photos by the author.



Flight of Sandhills, March 26, 1954, Hershey, Nebraska.

Out of the Arctic each fall come the Lesser Sandhill Cranes (*Grus canadensis canadensis*), the majority migrating along their traditional route, reaching a concentration point in south-central Saskatchewan. Later they move slightly east and southward to their wintering grounds.

Dementiev and Gladkov (1051:115) wrote that Sandhill Cranes in the Anadyr region, northeastern Siberia, began to group into flocks, young with their parents, by the 20th of August and they begin to fly south, prolonging this until mid-September and even to the end of the month. At Anadyr Bay the departure was August 29 to September 13, 1930; at the mouth of the Tanyurera River, last birds were seen on September 15, 1931 (there was 18 cm. of snow here on September 14); and in 1932 at Novomariinck the last birds were observed September 9.

This period agrees with western Alaskan migration dates which I listed in *The Sandhill Cranes* (1949:168). Brina Kessel (letter to author) wrote that she saw about 150 cranes

in flocks of 10 to 50 migrating August 25, 1952 at 7 p.m. at Fairbanks, Alaska, and heard many cranes August 17, 1955. She also observed a flock of 90 passing over the college, September 4, 1955. Smith (1958:51; 1959:56 and 1960:64) wrote that an estimated 400-500 cranes went through the Cahoe, Alaska, district, September 8 to 14, 1957, while the majority moved out September 18, 1958, prior to a front, followed by the last on October 8, and a flock went over September 26, 1959. Manning *et al.* (1956:56), wrote that cranes left the north shore of Banks Island, northern Canada, August 24, 1952; at Back Point, August 18, 1953, and from the east coast September 1, 1953.

Rand (1944:117) saw a great flight through the Fort Nelson area, British Columbia with flocks totalling 500 passing overhead, September 16, 1943 and he observed others on September 15 and 17. William Rowan (letter to author) wrote: "Cranes migrate through here in countless thousands. I find them much scarcer in the spring than in the fall. The main migration

often starts before the middle of September, but the latter half is more typical. Harrold and I once estimated that we had some 30,000 cranes over our tent in one day, 50 miles east of Edmonton. During the early hunting season one often sees cranes going south-east all day while every other hunter everywhere else seems to have the same experience in Alberta."

Some Sandhill Cranes arrive in the Saskatchewan farming areas by August 1 (Munro, 1950). Gradually accumulating into large flocks in certain areas by mid- to late August, some remain into mid-October. Probably the individual content of the flock varies from time to time as the birds move on southward and others come from the north and northwest. The Last Mountain Lake Sanctuary created in 1887 and described in the *Blue Jay* (1960:71) is the area used by the largest number of birds in Saskatchewan but it is completely surrounded by farm land. The farm land is used primarily to raise wheat and Sandhill Cranes like wheat and other grains. They roost in shallow water then fly early in the morning to available food which in this case is grain.

In 1935 and 1936 and thereabouts, many wildlife refuges were set up in the United States. Many of these were in the Dakotas, Montana, New Mexico and Texas. Primarily for the protection of waterfowl, these have also served well for other species, including the Sandhill Crane.

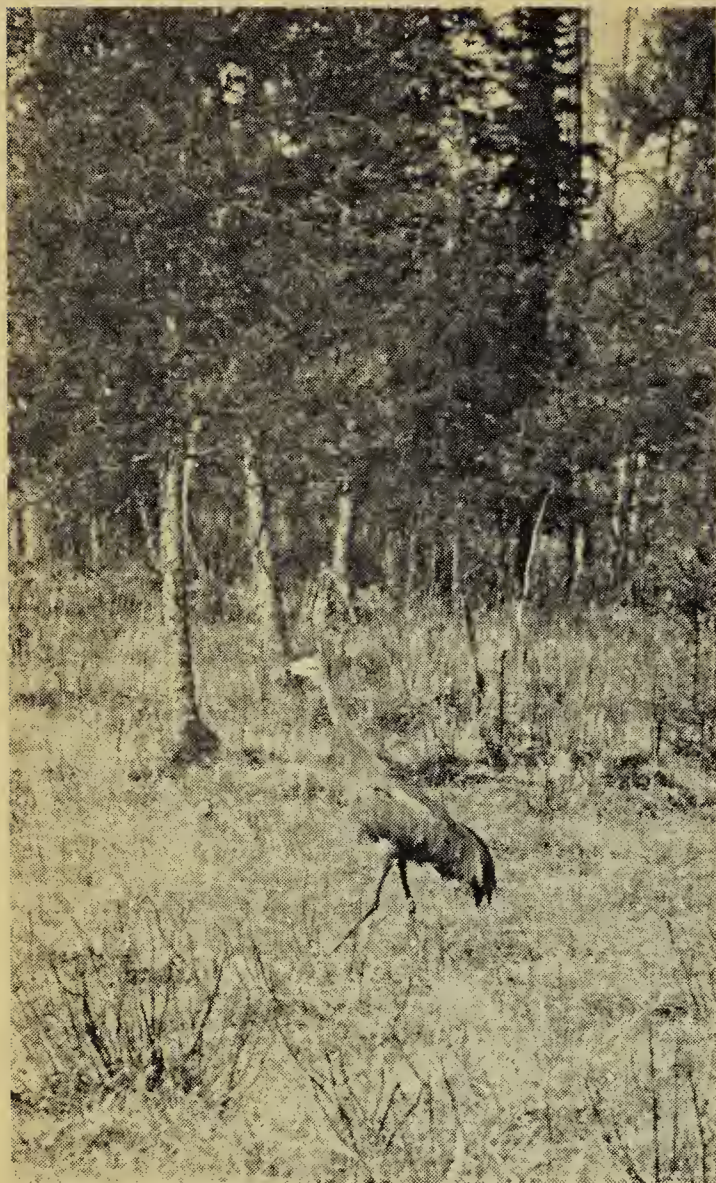
The Lesser Sandhill Crane nests in the Arctic, from northeastern Siberia, through Alaska and across northern Canada, north to Banks Island and eastward to Baffin Island and Southampton Island, southward at least to Great Slave Lake and Churchill, Manitoba, and possibly farther southward. This distribution has changed little during our times. Probably the numbers of hunting Eskimos have produced no severe damage to cranes at any time (I suggest that we consider the Sandhill Crane as a food source for Eskimos). Consequently the loss of cranes reported by Bailey (1928) must have been in southern Canada and in the United States. This definitely must have been caused by hunting pressure, probably chiefly in the United States in winter. This was the same period when the Whooping Crane (*Grus americana*) disappeared

and those Greater Sandhill Cranes (*G.c. tabida*) from the southern Great Plains, Canadian Provinces and states such as the Dakotas, eastern Montana and Nebraska. The cranes of southern Manitoba, Minnesota and Iowa disappeared at the same time, as well as the great flocks of cranes that used to migrate over Iowa and Missouri and those wintering in Louisiana.

The wintering range of the Lesser Sandhill Crane extends from southern California, probably as far north as Portland, Oregon, eastward to the Texas panhandle and to southeastern Texas and southward into Mexico with reports from San Luis Potosi and even farther southward.

In Christmas counts made throughout North America in the past 40 years, there were practically no Sandhill Crane reports until 1938 when 91 were listed from Aransas National Wildlife Refuge, Texas. During 1957, 425 were counted here, in 1958, 75 and in 1959, 36. At San Benito at the Laguna Atascosa National Wildlife Refuge 68 cranes were counted in 1953-54; 742 in 1954-55; 632 in 1955; 491 in 1956; 776 in 1957; 1,761 in 1958 and only 32 in 1959. At Carrizo Springs, Texas, 1,900 cranes were counted in 1957 and 700 in 1958 and at Stanton, Texas, 18,967 in 1959. At Muleshoe National Wildlife Refuge, Bailey County, Texas, the counts have been 1942 (850); 1944 (5,052); 1945 (1,120); 1949 (188); 1953 (12,000); 1954 (15,000); 1955 (30,000); 1956 (41,000); 1957 (55,000); 1958 (36,000); 1959 (18,500). Other Texas areas where cranes were listed were Alamo, Alice, Big Springs, Cove, Del Rio, Eagle Pass, El Paso, Freeport, Harlingen, Houston, La Sal Vieja, Midland, Odessa, Palmetto State Park, Pyote, Richmond, Rockport, Sabinal, Tivoli, and Welder Wildlife Refuge. At the same time cranes apparently winter over much of western Texas where shallow water in lakes or streams offers roosting areas and when winters are not too cold.

Cranes were reported from New Mexico at Bitter Lakes National Wildlife Refuge, Roswell, 1942 (5,772); 1943 (6,012); 1949 (800); 1950 (11,005); 1951 (11,635); 1952 (13,477); 1954 (6,763); 1954 (6,049); 1955 (14,000); 1956 (35,000); 1957 (20,000); 1958 (22,750); 1959 (12,350). At Bosque del Apache Na-



Sandhill Crane at nest site, May 30, 1942,
Fawcett, Alberta.

tional Wildlife Refuge, San Antonio, New Mexico, 1948 (200); 1949 (66); 1950 (116); 1952 (310); 1953 (6); 1954 (1,237); 1955 (850); 1956 (1,084); 1957 (1,219). They were also reported from Carlsbad Caverns National Park, Virden and Socorro; at Kearney, Nebraska, January 1, 1959 (1); Reno, Nevada, in 1958 (3); Portland, Oregon, December 26, 1948 (42), December 29, 1957 (20) and at Tillamook, Oregon, December 26, 1949 (6).

In California, at Chico, 1957 (26); Gray Lodge Wildlife Refuge, 1952 (28), 1954 (426); Lodi, 1953 (510), 1955 (4,021), 1958 (16); Marysville, 1957 (12); Orange County, 1951 (1); Red Bluff, 1952 (38), 1953 (350), 1955 (650); Redding, 1958 (6) (28); Salton Sea, 1939 (279), 1956 (3). The crane has almost disappeared here in winter. Cranes were observed at Sacramento: 1944 (39), 1950 (10), 1955 (2), 1958 (130); and at Stockton, 1951 (250), 1952 (500). Probably the largest winter concentration in Cali-

fornia now is at the Carissa Plain, at Soda Lake, San Luis Obispo County, where Eben McMillan (letters to author) has estimated about 5,000 cranes in some years and down to 500 in other years depending on drought conditions. In January, 1947, a flight of 3,200 cranes headed out from the plain in groups of one to 300. In 1960-61 this concentration was about 10,000. Another recent California concentration area was south of King City, Monterey County, where 1,000 cranes were observed February 12, 1959 (Cutler and Pugh, 1959). From existing specimens, both *canadensis* and *tabida* winter in that state but the majority are *canadensis*. There are a number of specimens which were taken in 1897, 1898, 1909 and 1912 at Los Banos in winter and this area was used even up until March 13-14, 1929 (McLean, 1930). In earlier days cranes used to occur in the San Francisco region in winter.

The complete Christmas count Sandhill Crane total has been as follows (this included *C.c. pratensis* in Georgia and Florida): 1923-1931, none; 1932, 2; 1934, 4; 1938 (2) (201); 1939 (3) 363; 1942 (4) 0,742; 1943, 6,012; 1944 (2) 5,091; 1945 (2) 1,163; 1946 (2) 19; 1947 (4) 249; 1948 (3) 253; 1949 (8) 1,237; 1950 (7) 11,659; 1951 (8) 12,254; 1952 (14) 14,653; 1953 (13) 20,156; 1954 (17) 29,255; 1955 (16) 46,503; 1956 (18) 80,135; 1957 (25) 80,577; 1958 (24) 62,142; and 1959 (25) 50,602.

All of the North American cranes have increased in numbers since 1940 but probably *G.c. canadensis* has increased the most because there were more to begin with. The majority of these winter in central California, eastern New Mexico and western Texas and no one knows how many nor entirely where in Mexico. Older specimens exist from Cerro Prieto, Baja, California; Rio Verde, San Luis Potosi; La Barca, Jalisco; and a specimen of *tabida* from Borbon, Mexico. Sight records of cranes have been made in winter: Oregon: mouth of the Columbia River by Lewis and Clark (probably authentic in view of recent Portland and Tillamook observations). One wintered at Malheur National Wildlife Refuge, Harney County, in the early 1940's (letter, U.S. Fish and Wildlife Service). There are winter records of lone individuals from Milwaukee, Wisconsin.

sin and Jackson County, Michigan. Frank W. Robl (letters) had cranes winter at his place at Ellinwood, Kansas, from 1927 for several years; one was shot in Lawrence County at Marionville, Missouri, in January, 1920 (Harris, 1920). The Nices (*Birds of Oklahoma*) list winter birds from Beaver, Washita and Tillman counties, Oklahoma. Cooke (1897) wrote that cranes wintered in Colorado in the Rio Grande Valley by the thousands. In California winter records are from Tehama, Stanislaus, Merced, San Joaquin, Fresno, Kings, San Luis Obispo, Los Angeles, Orange, Riverside and Imperial counties; in Arizona along the Colorado River Valley, and the Aqua Fria and San Pedro rivers, more recently at Ehrenburg, Gila Bend, Peoria (Maricopa County), Arlington State Waterfowl area, Theba, and Parker (Gale Monson *Aud. Field Notes*); in New Mexico in Bernalillo, Sante Fe, Socorro, Roosevelt, Chaves and Eddy counties; the species has been found then over most of the Texas panhandle south to El Paso and east to Houston, Aransas National Wildlife Refuge and the Brownsville area.

These counts indicate an increase rather than a decrease in the number of cranes, which at first seems incompatible with the decrease in suitable habitat. Cranes, however, were decreasing in number until the creation of the wildlife sanctuaries in the 1930's. The increase has come since then, indicating that fewer birds have been killed or have died in migration or in the winter in these protected areas, due to less disease or better food or both, and to less shooting by natives.

The great problem with the Sandhill Cranes is the problem of crop damage. The areas of greatest crop damage are the areas of greatest concentrations: Carissa Plain, California; Bitter Lakes National Wildlife Refuge, New Mexico; Muleshoe National Wildlife Refuge, Texas; Lower Souris National Wildlife Refuge, North Dakota; Last Mountain Lake, Saskatchewan. The nature of the damage differs from area to area because of different crops and harvesting conditions. In Mexico, Texas and New Mexico much corn and related sorghums are raised; in Indiana and in Michigan, corn and wheat; in



Nest of Sandhill Crane at Fawcett, Alberta, May 21, 1942.



Sandhill Crane nest, Caribou County, Idaho, May 24, 1941.

North Dakota, Saskatchewan, and the Carissa Plain, California, wheat. In Texas and New Mexico the grain is planted in spring, but it is already cut and in shocks when the cranes arrive and could probably be stacked if further protection were needed. In California wheat is apparently planted in the fall as in Indiana and Michigan, and there cranes eat the wheat not buried by the drill. Eben McMillan writes that they also browse over the new green wheat in California but no one has produced evidence that this browsing has produced any damage. In Saskatchewan and North Dakota, wheat has to be planted in the spring but in many areas it is not harvested until early September, whereas the cranes begin to return in August. Munro (1950) found that cranes in Saskatchewan were eating 53.7% wheat. About 90% of the stomach contents of five birds I found near Hershey, Nebraska, on March 22, 1954, consisted of corn and oat

hulls, and of course loose corn in the fields provides winter and spring forage for cattle.

Because cranes are not decreasing in numbers and because suitable marsh habitat is constantly being drained, crop damage is not going to decrease in the future. Who should assume responsibility for this crop damage? Because a farmer lives adjacent to a roosting area should he be required to feed thousands of cranes? Surely this would be unjust! The cranes belong to all the people of Canada, the United States and Mexico, and the governments of these three countries are therefore jointly responsible. If we want cranes, all of us should help to meet the problems they pose.

The governments of Canada and the United States have already experimented with one solution to the problem. During the fall of 1959 the Canadian Government opened the season on Sandhill Cranes at the

north end of Last Mountain Lake, Saskatchewan. For January 1-30, 1961, it is open in eastern New Mexico, right up to the fences of the Bitter Lakes National Wildlife Refuge, with two cranes allowed for a bag limit each day and two in possession. One wonders whether the cranes will stay at the Bitter Lakes Refuge once the season opens. What is happening to the cranes under pressure of an open season is being studied in New Mexico this January by Dr. John W. Aldrich and by Dr. Harold S. Peters who has made several trips there and into Saskatchewan this past fall and winter. The results of their finds will give us some insight into the composition of the flocks wintering in New Mexico.

In certain parts of Mexico, hunting Sandhill Cranes has apparently been legal for some time. Yet, as far as I know we have made no attempt to study the effects of the open season in Mexico, or the feeding habits and composition of the flocks there.

As a solution to the crane problem an open hunting season has obvious dangers. The two cranes that might suffer the greatest loss are the Whooping Crane and the Greater Sandhill Crane since both these birds are more conspicuous than the Lesser Sandhill Crane.

A more intelligent approach would seem to be that offered by recent articles in the **Blue Jay**. Since cranes are gregarious, dispersals of flocks is not practical and concentration will

undoubtedly become larger in the future as suitable habitat is destroyed. Carefully managed feeding areas are needed for winter concentrations and for concentrations at key points along the cranes' migration route. Naturally, crops raised beside the refuges will suffer damage; probably this grain could be leased and cut for the cranes.

It seems only just to offer compensation to farmers who suffer loss from cranes. There is always the danger of less scrupulous people exaggerating crop losses, but compensation could be based on the difference between the yield of a heavily-pastured field and one where no cranes were feeding.

The damage done during the fall and winter is apparently the main problem. In this paper I have not discussed the spring concentrations throughout North America such as in the Harney County, Oregon, the Platte and North Platte River areas of Nebraska (where at times 100,000 cranes have been counted). However, in talking much with farmers I find that they do not seem bothered by the large number of cranes in spring. Many of them like the cranes and their bugling voices. They know that the cranes eat loose corn in their fields, left over from the fall harvest. They know where the cranes roost but seldom do they disturb them. One man said these concentrations did not occur until the advent of the mechanical corn picker which left much grain on the ground.



Sandhill Crane nest, Jackson County, Michigan, May 9, 1935.

The Sandhill Cranes of Big Grass Marsh

by J. B. Wright, Plumas, Manitoba

I saw cranes, as a small boy going to school, in the spring of 1888. We lived about five miles west of the Big Grass Marsh where we sometimes pastured our cattle. A little creek touched the side of our homestead. This creek was called Crane Creek before we came to the district so cranes were here before the white man and we were the trespassers on their territory.

The Big Grass Marsh, here in south central Manitoba, is about twenty miles from north to south and from four to six miles from east to west. The water level in this area varies from year to year but always there are some shallow lakes in the lower spots. The higher spots are usually dry and here farmers have permits to cut hay. The west side of the Marsh is a community pasture which is fenced for cattle. Much of the Marsh is a Wildlife Preserve where hunting and trapping are prohibited. Sometimes the boundaries of the preserve and the pasture coincide but the preserve includes more of the Marsh. The preserve includes 58 sections and 11 half sections and all the road allowances in the areas. The preserve, therefore, includes more than 40,000 acres.

I have always been interested in all forms of wildlife. My observations cover a period of over 60 years as I worked about the farm, roamed over the country, herded cattle or hunted. Although, like other farmers, I do not like the damage done to the crops by birds I do like to have the refuge close by. I do like to see the birds and am glad to be in the only area in Manitoba where there is a considerable concentration of Sandhill Cranes. We also used to see a few Whooping Cranes in the spring in early days. We called them "White Cranes." I think the last I ever saw would be in the last half of the nineties.

Ducks, geese and cranes do some damage to crops although this year, 1960, the damage was slight for the harvest was early. The birds fed in combined fields while the farmers were harvesting elsewhere. Most of the damage, in any case, is on account

of the manner of harvesting. Some birds have always fed in fields since crops were grown. They did little damage to sheaves or stooks, they mostly picked up what was loose on the ground—but now they tramp and defile the swaths as well as eating grain.

In the early days we would not see much of the Sandhill Cranes in summer, but a few flocks would come to the grain fields in harvest time. Some cranes nested in the Marsh and I once saw a young one which had been captured by two brothers who had been haying in the Marsh. A Mr. Blackstock told me that

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the cranes used to hatch round sloughs a little northeast of Keyes and that they just laid two eggs. I think the Cranes started feeding in the fields in larger numbers about 1930. The refuge serves as a real sanctuary from which the birds come morning and evening to feed in the fields. The closest fields are used first but as the fall hunting season begins the birds begin to go as much as ten miles from the refuge.

I think that it is great that we have this refuge, for we always have birds close by. Both farmers and urban people alike enjoy the pleasure and profit of being able to hunt in their own area. But even greater than the thrill of hunting is the pleasure of seeing and hearing a flock of ducks feeding, those at the rear flying up to the front, now and then a green head raised to look for trouble and all the time the low quack-quack, quack-quack; or a flock of Canada Geese or Sandhill Cranes. Those sharp eyes of theirs miss nothing.

There will be some damage to crops every fall in the Big Grass Marsh area. The Manitoba Government has experimented with feeding stations at the marsh's edge but the success of this has not been great and geese and cranes do not use the stations. Last fall, 1960, the Manitoba Government with the help of the Canadian Wildlife Service studied the problem and helped troubled landowners to scare cranes from unharvested fields. This program will be continued during 1961.

Farmers suffering damage should be paid for their loss but I would not like to see an open season on the Sandhill Crane. Even though there may be 10,000 each spring and fall in this area they could easily be wiped out by an open season, for they have, like a Whooping Crane, a very slow rate of increase. It was man that almost exterminated the Whooping Crane and I would not like to see this happen to the Sandhill.



Part of a flock of 25,000 Sandhill Cranes on roost area along the Platte River, Nebraska, March 26, 1954.

Mallards do Dive

by Douglas E. Wade and Dorothy R. Wade, Regina

The phenomenon of Mallards diving has been witnessed this winter on the open waters of the Wascana Waterfowl Park in Regina by several observers. On December 13, 1960, we observed a group of six Mallards diving. On other visits—December 23, 25, 27 (1960) and January 1, 2 and 14 (1961)—we observed groups of Mallards diving. Dr. Isabel Coleman also observed the diving on December 26. Diving appeared to increase when the shallower water became iced over. Most of the 300 or more Mallards (both sexes) seen on January 2 were diving.

The Mallard dives awkwardly compared with the true divers. It throws up some splash behind as it works its way under. This splashing is distinctive. Using the method of counting from 101, 102, etc. to estimate the number of seconds, we noted that the time under water varied from one to 11 seconds, the most frequent being seven seconds. Times were checked for at least 50 Mallards. A hen Mallard held the record of 11 seconds, but several males were under at least 10 seconds. The longest distance travelled under water was estimated to be seven feet. The precise depth of water where the birds were diving was not determin-

ed, but we believe the depth varies from about 1½ to five feet.

Although we have not yet seen food in the bills of the diving Mallards, we believe the activity is associated with feeding. We have seen the tip-up or dabbling action going on in shallow water while Mallards in deeper water were diving. The presence of more than 600 Mallards wintering on the Wascana may have depleted the food supply in the shallow water.

A cursory examination of the literature reveals little information on the diving of Mallards. A. C. Bent in *Life Histories of North American Wild Fowl* (1923) states that "mallards . . . escape (enemies) by diving and clinging motionless to weeds more often than attempting to swim long distances under water." Another dabbler, the Gadwall, dives if necessary for food (R. Pough, *Audubon Water Bird Guide*, 1951, p. 81).

Present at the Wascana Waterfowl Park during December, 1960, and January, 1961, were such excellent divers as Buffleheads, Ruddy Ducks, Lesser Scaup, Common Goldeneyes, and Pied-billed Grebes. Whether or not water birds learn certain activities by association has been little explored.

Apparent Escape Behaviour of a Red-Breasted Nuthatch

by R. W. Nero. Sask. Museum of Natural History.

The Red-breasted Nuthatch (*Sitta canadensis*) was surprisingly uncommon in the Uranium City area of Saskatchewan during May, June and July, 1960. While walking along a lightly-forested ridge south of Lorado Uranium Mine on the morning of May 14 I heard its characteristic call from a solitary white spruce on a rocky slope supporting mainly aspen and jack pine. However, since this species had only been recorded a few times for the area I was anxious to identify it by sight. I came upon the nuthatch quite suddenly and evidently surprised it. At once, and before I could get a good look at it, it scrambled out of sight and was silent. I walked around the tree, squeaking on the back on my hand

to draw it out, but was unable to find it. Yet, since the tree stood quite by itself I was positive that the nuthatch had not flown. Suddenly I was surprised to see what appeared to be a dead bird, perfectly motionless and dangling from a horizontal branch about 12 feet above the ground. At first I felt sure that it was a dead warbler entrapped by its feet and hanging downward. I moved about the tree in some elation, thinking to secure a specimen, and in order to identify it first, raised my binoculars. At that precise moment the "dead" bird moved slightly, hardly altering its position, and at once I realised it was a nuthatch, hanging by its toes, head and neck downward at full length, with its breast facing me;



Drawing by Fred W. Lahrman. S.M.N.H.

what I had mistakenly taken to be the back of a warbler was actually the underparts of the nuthatch. In a moment it shook itself, as if suddenly recovering from some strain, as birds do, then began feeding in its usual manner. After a few seconds it flew away from the tree.

"Freezing" behaviour is not uncommon in birds and the protective value of remaining motionless in the presence of a predator is clear. I had at first overlooked the nuthatch right in front of my eyes, and found it only after some effort. I presume that nuthatches would not ordinarily react in this way to a human, but the surprise of unexpected appearance must have triggered this reaction. It seems peculiar for a bird to adopt the upside-down position for sudden

"freezing," but this position, of course, is characteristic of nuthatches.

Mrs. Louise de Kiriline Lawrence, Rutherglen, Ontario, has done considerable work with Red-breasted Nuthatches (see, for example, her "Irrepressible Nuthatch" in **Audubon Book of True Nature Stories**, 1958, Thomas Y. Crowell Co., New York), but she has not observed nuthatch behaviour as described above (pers. corres., 1960). However, she recalled somewhat similar behaviour in a Black-capped Chickadee:

"Many years ago I had an experience with a chickadee which, although not quite similar to yours, nevertheless immediately brought it to my mind. I was approaching the nest of a pair of chickadees to check just as the young were emerging. The parents became very upset. One of them flew toward me, but instead of attacking it alighted on a horizontal branch in front of me. Here it proceeded to swing itself down, as if falling, but holding fast with its feet, then swinging itself back into upright position again. This was done a number of times all along the branch, a perfectly fascinating performance of ups and downs.

"In this case it was obviously a distraction display. Apparently it was as natural for the chickadee to include the upside-down performance in its display as it was for your nuthatch, although in our minds neither display is commonly associated with this attitude."

KINGFISHER ESCAPE TACTICS

by R. W. Nero, Sask. Museum of Natural History

Recently, Thomas Heaslip submitted to me his records of bird observations made near Uranium City, Saskatchewan, from 1956 to 1960 (see **Blue Jay**, 17:57-58; Heaslip's present address: Loughries, Newtownards, Co. Down, N. Ireland). Among his notes there is included a description of behaviour in a Belted Kingfisher (*Megasceryle alcyon*) which closely resembles observations previously described for this species (Nero, R., 1949. Escape behaviour of a Kingfisher. **Passenger Pigeon**, 11:132). On July 14, 1959, Heaslip watched a Kingfisher hovering over a small lake near Lorado Mine. Suddenly, he

writes, a Sparrow Hawk (*Falco sparverius*) appeared and closely pursued the Kingfisher. The latter dived down to the level of the water and then repeatedly plunged into it ("broke the surface"), each time sending up a shower of spray in front of the hawk, which finally gave up the chase. The earlier report describes a situation in which an aggressive male Redwinged Blackbird chased a Kingfisher until deterred in a similar way. In both of these cases the pursuer would appear to have been more of an annoyance than a danger. This suggests that these evasive tactics of the Kingfisher may be limited to encounters of this sort.

A Second Pair of Trumpeter Swans Nesting in Saskatchewan

by Fred W. Lahrman, Sask. Museum of Natural History



Photo by F. W. Lahrman. S.M.N.H.

Nest of Trumpeter Swans at Adams Lake, May 18, 1960.

On May 18, 1960, F. G. Bard and I checked the nest of a pair of Trumpeter Swans (*Cygnus buccinator*) on Adams Lake in the Cypress Hills. A pair of Trumpeters has apparently nested annually in this area since the first S.M.N.H. nesting record in 1953 (*Blue Jay*, 11(4):26-27). In 1957 an additional adult was recorded for the first time with the breeding pair (*Blue Jay*, 15:138-139).

The huge nest, approximately six feet in diameter, was in shallow water approximately 30 yards from shore and well concealed by marsh vegetation. There were only three eggs in the nest, so evidently the clutch was not complete. The adult birds were very wary and vanished from sight as soon as we appeared, even though we were still over half a mile away. After photographing the nest and eggs we made a hurried retreat because the day was cold, with rain and snow, and we did not want to risk chilling the eggs.

On August 18 we again visited the swans on Adams Lake. This time they had three gray downy young about the size of small geese. There were two adult non-breeding swans on the lake as well. The Conservation

Officer at the Cypress Hills Park reported checking the nest before hatching and there were then seven eggs. It is not known whether the other four eggs were hatched or not, or why the swans had only three young.

Meanwhile David Munro, Chief Ornithologist, Canadian Wildlife Service, reported a pair of swans with four young in the Belanger Creek area, Cypress Hills Park. On September 2, Mr. Bard and I checked the pair on Belanger Creek. We caught a glimpse of the adults before they hid in the rushes, and although no young were seen we believed that the secretive behaviour of the adults indicated they had young hidden near by. The total number of swans observed were seven on Adams Lake and two on Belanger Creek.

Mr. Munro's report of the breeding pair on Belanger Creek was very good news as this is the first time that a second pair of Trumpeters has been known to rest in Saskatchewan and indicates an increase in the small flock residing in the Cypress Hills.

A pair of Trumpeter Swans nesting in the Cypress Hills in Alberta was reported in the *Canadian Field-*

Naturalist in 1951 by Robert Lister. Lister had noted a pair without young in 1948 but accompanied by cygnets in 1949 and 1950. This is the only record for the Cypress Hills given by Winston E. Banko (1960. The Trumpeter Swan, its history, habits and population in the United States. U.S. Fish and Wildlife Service.) It should be noted, of course, that Banko's study deals primarily with the United States population and therefore only in a general way with Canada. A comparable study of the Trumpeter has been undertaken by the Canadian Wildlife Service, with investigations being conducted chiefly in British Columbia and Alberta by Ronald H. Mackay, wildlife biologist.

EDITOR'S NOTE: A pair with one young seen October 4, 1960, by Mrs. Percy Drury on a small lake by the Cypress Hills Park, may have been the pair reported by Munro.

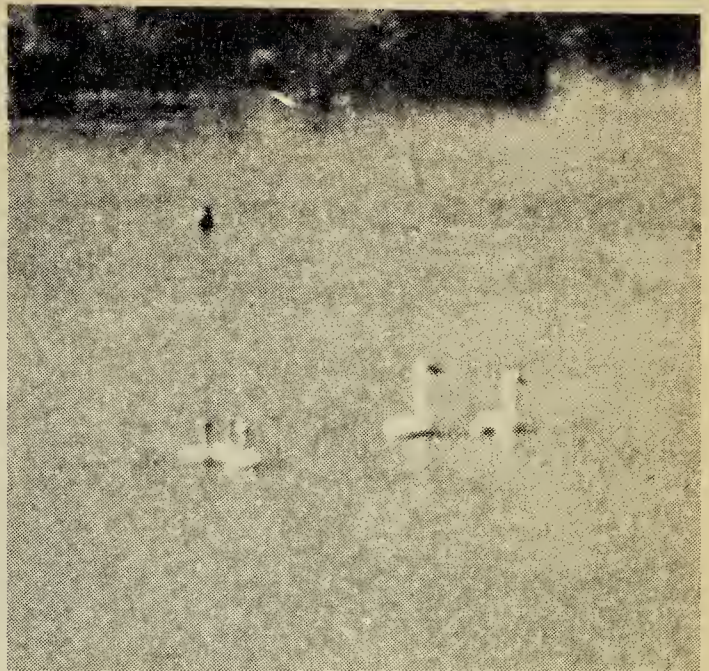


Photo by F. W. Lahrman. S.M.N.H.
Trumpeter family on Adams Lake,
August 18, 1960.

My Neighbours the Martins

by **Elwin Baines, Tisdale**

When Mr. and Mrs. E. W. Van Blaricom retired to Kelowna and I moved into their Tisdale home Mr. Van explained to me that the Martin house was included in the deal. However, no Purple Martins had used the house up to that date, and they came to me in the following spring only because they found their former home in a neighbour's backyard occupied by a family of red squirrels. At the time Tree Swallows and House Sparrows were fighting for possession of my Martin house and the battle had reached a stalemate. At this opportune moment the Martins arrived to take over. Their tenantry of the house has not been in doubt since, and they have raised broods in 1958, 1959 and 1960.

The Martins have proved themselves to be the most desirable neighbours. They chit chat over the clothes line on Monday mornings or they may have a few remarks for me when I drive up with the car or truck. They are extremely tidy and no refuse is ever seen around their house. Now that they are definitely settled nothing disturbs them, and half a dozen strangers can drop in unexpectedly without the Martins objecting.

I can now predict almost to the hour when the Martins will return

from the south each spring. For the past two years, Papa Martin has arrived here on May 8. For 10 days he appears alone and disconsolate. Then, promptly on May 18, Mama Martin is sitting on my telephone wire beside papa. They take possession immediately but do not lay eggs until well into June. Both birds carry in green leaves as soon as eggs are laid. Young hatch early in July. Both parents carry insects, small at first but as soon as the young develop many of those large blue dragonflies are eaten whole, wings and all.

The young do not take practice flights but fly like mature birds the first time out. They only return to the Martin house once or twice and leave the site almost at once. It appears that Martins take more than one year to develop as there are always some immature birds around that look like last year's young.

What man could duplicate the feat of the Martins? Flying alone with nothing but a pair of strong wings and an unerring instinct the Martins set out from their southern retreat and land at a little white house on the eastern edge of Tisdale almost to the hour each year.

Bank Swallows Nesting in Gravel Stock-Pile

by R. W. Nero, S.M.N.H.



SMNH Photo

While en route to the Summer Meeting of the S.N.H.S. on June 12, 1959, a group from the Museum including Bruce Shier, Janice Briggs, Joyce Dew and myself found a colony of Bank Swallows (*Riparia riparia*) nesting in a gravel stock-pile near the south entrance to Moose Mountain Provincial Park (in southeastern Saskatchewan). Although we did not take time to check nest contents, swallows were flushed from nearly every burrow and a general impression was obtained of a well-established colony. The Bank Swallow's habit of building burrows in sand banks of both natural and artificial origin is well known and it is even pointed out that a majority of colonies are located in artificial banks, e.g., railroad or road-cuts and sand and gravel pits (Stoner, 1936; Bent, 1942; Peterson, 1955). However, I was unable to find any reference to Bank Swallows building nest burrows in an artificial **deposit** of sand or gravel, even though stock-piles of such material are rather numerous.

Presumably the material in most stock-piles is too loose and lacks the compactness required for a more or less vertical wall to develop. The gravel stock-pile at Moose Mountain consisted of "pit-run" gravel, that is, a natural, unwashed mixture of small rounded pebbles, coarse sand and clay. Apparently the natural cementing action of clay in the mixture provided sufficient compactness, and further solidification of the mass was probably due to the packing action of bull-dozer building the stock-pile, an action resulting in the horizontal layers which are apparent in the photo. Recently, after my mentioning this observation, Miss Margaret Belcher recalled a similar situation, and she kindly provided the following information from her notes. On July 24, 1955, while travelling in a train, she noticed that a small colony of Bank Swallows was established in a vertical face of a gravel stock-pile just south of Hanley, Saskatchewan. One other type of artificial deposit has served as a nest-

site for Bank Swallows. W. B. Barrows and B. Torrey (in Bent, 1942: 404) report swallows nesting in sawdust piles left by lumbering operations. Bent has said sawdust piles are likely to prove to be precarious nesting sites; the same can be said for gravel and sand stock-piles which, of course, are generally in regular use.

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MOCKINGBIRD AT GRENFELL

Mrs. John Hubbard of Grenfell reports seeing her first Mockingbird on November 7, 1960, in Grenfell. Although she did not expect a bird characteristic of the Deep South in Saskatchewan in November, Mrs. Hubbard was able to identify it to her satisfaction even without binoculars because she had a close view of the bird as it flew across the street in front of her and hopped from bush to bush in nearby shrubbery. The

late date compares with other November dates on record: a male was taken at Skull Creek by S. A. Mann on November 1, 1929 (SMNH specimen); J. H. Taylor saw one in Regina on November 4, 1934; Lillian Hedley had one visiting her yard in Saskatoon through November, 1958, until it was killed by a cat December 9, 1958.

RIGHT ON COURSE!

Interesting recovery of a banded
Purple Finch

A beautiful male Purple Finch was found dead on April 30, 1960, by Peter Scott, at 182 Tupper Avenue, Yorkton. An observant lad, Peter noticed that the bird carried a small band. On reporting this, he learned that I had placed the band on this bird on May 17, 1959—just half a mile east of where he found it one year later. Although banding has proved that adult birds usually return to the same nesting site year after year, it is unusual to have evidence of a bird following exactly the same path **during migration** on two successive years. Purple Finches winter as far south as Texas, and are seen in Yorkton only on their way to the coniferous areas further north.—C. Stuart Houston, Saskatoon.

Third Annual Report of the Prairie Nest Records Scheme

by E. L. Fox, Regina

The Prairie Nest Records Scheme has just completed a third successful year. Since the scheme began, over 4,000 nest record cards have been turned in on 168 species of birds found breeding in the Prairie Provinces and the Northwest Territories.

In most cases, the cards have been submitted by amateur naturalists. This is an example of how the amateur can assist the professional in his research. Information on the breeding period, incubation period, and distribution of birds is urgently required. The amateur can assist by accurately recording his observations on a nest record card, and submitting it to the Saskatchewan Museum of

Natural History for filing. It should be clear that information is required on even the most common bird breeding in your area, and that as much information as possible should be recorded on each nest found. Every interested person has access to the information contained in the Scheme's files.

By January 15, 1961, 37 contributors had submitted 1361 cards on nests found during 1960. Information was recorded on 145 species of birds. Some cards were received too late to be included in this report. Contributors should turn their cards in by October 1, 1961.

CONTRIBUTORS: G. Chopping, J. Gunn, W. Grout, S. Seely, V. Schmidt, J. Lane, R. Nero, P. Earnshaw, S. Alberts, K. Paton, D. Mossop, W. Anaka, D. Karasuik, R. McPherson, D. Chandler, F. Lahrman, E. Hanson, G. Fletcher, R. Gehlert, R. Sanderson, H. Burns, J. Iverson, F. Brazier, L. Lohr, E. White, S. Zazelenchuck, E. Dodd, D. Meyers, H. Burns, L. Beckie, Brandon Birdwatchers, R. Adams, R. Klimack, R. Cowell, G. Fox, E. Kuyt, R. Lein, J. Dew, J. Briggs.

Little information is available for certain areas or for certain species. We need information from Weyburn, Estevan, Prince Albert and Saskatoon areas, and from Manitoba and Alberta generally. Opportunities for gathering information on certain birds should not be ignored. For example, a great influx of Lark Bunting was noted during 1960, yet only one nest was reported. These birds may be present in even greater numbers next year or they may be entirely absent. Take advantage of an opportunity such as this.

All observations are important but we should strive for quality rather than quantity. A card recording observations from egg laying to flight of young is more valuable than a single observation. So record as much as possible. But, in every case **DISTURB THE BIRDS AS LITTLE AS POSSIBLE.** Four or five well-timed visits are sufficient for most of the perching birds. Colony nesting birds such as gulls or terns should not be disturbed for more than five or ten minutes. Recording the colony and its location is all that is required.

A new supply of cards will be sent to all 1960 contributors. Others who wish to record nesting information should write for cards to **The Prairie Nest Records Scheme, Saskatchewan Museum of Natural History, Regina, Sask.**

INFORMATION WANTED

INFORMATION ON—

WHOOPIING CRANE SPRING MIGRATION

Dr. Lansing Parker, Assistant Director, U.S. Fish and Wildlife Service, writes that three adult Whooping Cranes have failed to return to Aransas. There were six young during 1960 so the wild population is now up to 36 from 33 one year ago. There are also six birds in captivity. During 1959 nine young reached Aransas but three adults failed to return that year, too.

Send reports of Whooping Cranes observed in spring migration, 1961, to **Saskatchewan Museum of Natural History, Regina, Sask.**

INFORMATION ON—

SPRING GOOSE AND CRANE CONCENTRATION AREAS

The Canadian Wildlife Service is interested in locating the concentration areas of geese and cranes in the Prairie Provinces during spring migration. The general purpose is to improve the management of these species by learning more about the relationship between spring migration routes, breeding grounds and fall

concentration areas. The immediate aim is to determine the feasibility of trapping and marking the north-bound birds as a means to the overall objective.

We are asking readers of the **Blue Jay** to take a major part in this project. Will you please advise us by April 1, 1961, of the concentration areas that you know were used during April or May of **1959 and 1960** by Canada, Snow, Blue, Ross' and/or

INFORMATION ON

THE BALD EAGLE

Alarmed by reports of a downward trend in the population of Bald Eagles, the National Audubon Society has launched a study of the Bald Eagle designed to cover at least five years and to gather data from all North America. The study will include an inventory based on active nests located and an investigation of eagle biology. Information is needed on the location of active nests and also on wintering concentrations of eagles. If you have information on these or other facets of eagle biology, write **Alexander Sprunt, IV, Box 231, Tavernier, Florida.**

White-fronted geese, as well as those used by Sandhill Cranes. We would like to know the location (distance and direction from the nearest town), whether there were more or less than 250 geese or cranes at any one time and, if possible, what species and what periods were involved. A postcard will be fine.

During April and May, 1961, we plan to check the areas that you name with a view toward trapping and marking birds in 1962. Readers would also do us a favour by sending along their own records for geese and cranes for the 1961 spring migration.

We will appreciate it if you will send your 1959 and 1960 observations by April 1 to: **Canadian Wildlife Service, Biology Building, University of Saskatchewan, Saskatoon, Sask.**

INFORMATION ON—

Neck-Banded CANADA GEESE

As part of a study of Canada Geese on their nesting grounds Charles D. MacInnes at Cornell University has banded and color-marked birds which nested near Eskimo Point, District of Keewatin, on the west shore of Hudson Bay. In 1959, 146 birds were banded and in 1960, 540 more. Pink plastic neck bands were placed on these birds so that they could be reported even when out of season or on protected ground. If you see marked birds, please report them with the following observations:

(1) Where, and on what date did you see neck-banded birds? Note colour, even if not pale pink.

(2) How many marked birds did you see, and about how many birds, marked and unmarked, were there in the whole flock?

(3) If there were a number of marked birds, did they all seem to stick together, as if all of one family, or were they all mixed up with the rest of the flock?

Please send information to **Wildlife Branch, Department of Natural Resources, Regina**. It will be forwarded to Charles MacInnes, who will send you a summary report next season.

INFORMATION ON—

THE PIGEON HAWK

Glen A. Fox has been studying the life history of the Pigeon Hawk (*Falco columbarius*) in the Kinders-

ley area. He would like information on this species from other parts of Saskatchewan, Manitoba and Alberta on all aspects of its life history and behaviour.—**Glen A. Fox, Box 783, Kindersley, Sask.**

MIGRATORY CONGREGATIONS OF HAWKS

I was surprised to learn from Ralph Carson's article (*Blue Jay* 18:158) that there are so few records of hawk congregations. We have them every fall when it is fairly common to see hawks in 30's and 40's. Every telephone pole along the road for a mile or so and its neighbouring power pole has a hawk. I suppose they are Swainson's Hawks, the hawks that nest here, but hawks are hard to identify in the fall.

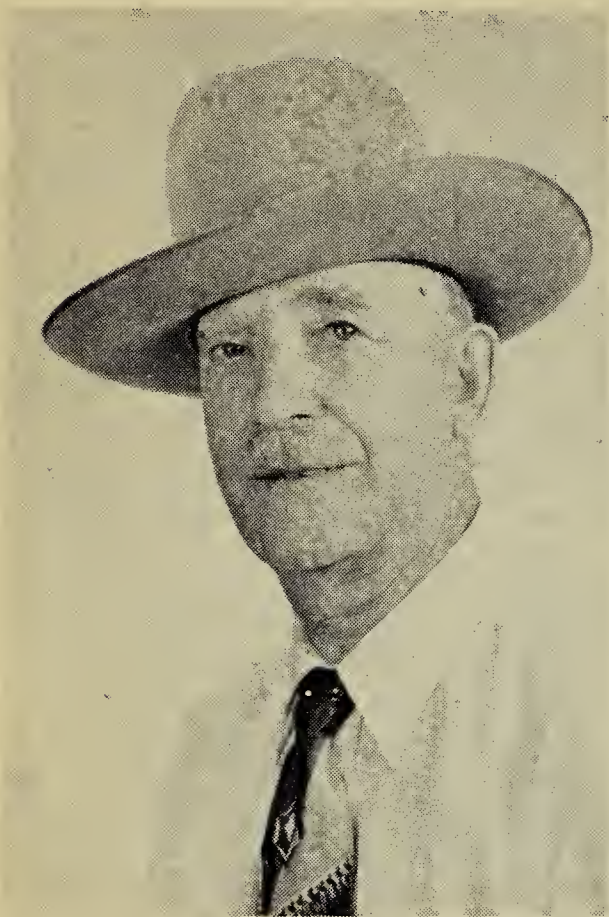
On September 16, 1959, I was hanging out clothes on a clear morning after a rainy spell when a flock of hawks flew over from the northwest. Never have I seen so many. I tried to count them between the power poles, and my count was 700! —**Mrs. E. C. Boon, Tullis.**

Last fall we observed a congregation of hawks similar to that described in the last *Blue Jay*. On September 7, 1960, near Kindersley we were able to stop the car about 300 yards from a flock of at least 40-50 Swainson's Hawks resting in a field. We had never seen a flock of hawks before, but several days later we observed another group of 11 in a field west of Kindersley.—**Mrs. M. Essar, Kindersley.**

I recently received a report on the flocking of one of the Buteos, the Rough-legged Hawk (*Buteo lagopus s. johannis*). In late summer, 1960, a flock of over 100 birds was observed for several days in the vicinity of an isolated weather observation post on Contwoyto Lake, Mackenzie District, N.W.T. Apparently the birds formed a fairly loose aggregation, soaring and wheeling in the sky and landing on the tundra on occasion. Since I was not at Contwoyto Lake I couldn't investigate the cause, but believe it may have been a combination of local abundance of food and the congregation of birds just prior to migration.—**E. Kuyt, Can. Wildlife Service, Yellowknife, N.W.T.**

Tribute to A. C. Budd (1889-1960)

by Elizabeth Cruickshank, Regina



All members of the Saskatchewan Natural History Society will receive with sincere regret the sad news of the passing on December 30, 1960, of Arch. C. Budd, formerly vice-president and director of the Society, and a regular contributor to the **Blue Jay**.

As a boy in England Archie Budd had been interested in all phases of natural history, with pond life and insects as his chief hobbies. Later, winning a limerick contest enabled him to leave the British Civil Service and come to Canada to acquire a homestead. When he arrived in the west the twenty-one-year-old newcomer found at his feet the prairie in springtime—a clean, broad outdoor land of wide horizons that was to interest and delight him throughout all his days.

On his half-section farm south of Rush Lake, Mr. Budd found that he did not know the weeds that grew around him. To study them he bought a bulletin "Farm Weeds" for a dollar. Formerly his only interest in plants had been to learn what ones were food for his caged caterpillars.

Now began an interest in the plants themselves that developed into a lifelong study. His knowledge found further usefulness when he joined the staff of the Dominion Experimental Station at Swift Current. Here progressively he became gardener labourer, soils researcher, weed taxonomist and range botanist.

Mounting specimens for the first time for a display at the World Grain Show in Regina in 1932, he found collecting and mounting plants of great interest. It became a hobby to which he devoted all his spare time. As a result he became curator of the herbarium at the Experimental Station in which he built up a collection of over 7000 plants. He also assisted in establishing a herbarium in the Saskatchewan Museum of Natural History.

After years of research on his chosen subject, Mr. Budd compiled a handbook on the **Flora of the farming and ranching areas of the Canadian Prairies** (1949). His desire was to provide an easily understood guide for identifying prairie plants, both for farmers who felt the need as he had, and for interested field men. The mimeographed work, with its many fine line drawings by the author, was so widely and enthusiastically received by amateur and professional botanists throughout the west that the Canadian Department of Agriculture reproduced it by a lithograph process in 1952 and then printed 5000 copies of a revised edition **Wild Plants of the Canadian Prairies** in 1957. This edition was soon exhausted and a second revision is now in the hands of the Queen's Printer. The publication of this handbook crowned Mr. Budd's life work, and is a suitable monument to the author—a very worthwhile contribution from which others will benefit in the land of his adoption. Other shorter publications of Mr. Budd's appeared from time to time, as well as the articles that we all knew in the **Blue Jay**.

Besides being a competent botanist, Mr. Budd was a man with a very sensitive appreciation of the natural world. To him every flower was an

open book and every piece of common ground a treasury of interest. At all times his heart was responsive to the beauty around him. Plants became the song—the music—of his life, and through his long and intimate study of them he found that order, meaning and harmony was the foundation of all nature.

No reader or listener could help catching Mr. Budd's enthusiasm as he described the Spring Beauty blooming in the Cypress Hills before the snow was altogether gone, or the difference that he had discovered between two types of seed produced on a single plant of Russian pigweed: one oval and winged, germinating readily; the other round and wingless with a long period of dormancy. Mr. Budd considered both the lilies

of the field and the weeds which pose so serious a problem for the farmer.

His was no easy life, but hard work and disappointments he took without murmur. Looking back over the years and seeing the fulfilment of his early dreams his heart was full of gratitude for all that his new country had meant to him.

Readers of the **Blue Jay** will miss his name on the pages which have been enriched and adorned by his articles and drawings for so many years. He will continue to be missed at the SNHS annual meetings. He has left a lonely place in the hearts of all who were privileged to know him, this humble student of the wonders of nature.

Records of Saskatchewan Fern Species in the Qu'Appelle Valley

by **Bernard de Vries**, Box 342, Fort Qu'Appelle

This is a brief annotated list of four fern species collected in the Qu'Appelle Valley and its tributary coulees during 1959 and 1960, with indications of where each collection was made. Fifteen collections are described.

The sequence of families and genera follows M. L. Fernald, 1950, **Gray's Manual of Botany**, and H. J. Scoggan, 1957, **Flora of Manitoba**. The numbers cited refer to collections in my herbarium. With certain exceptions, duplicates are in the herbaria of the Division of Botany and Plant Pathology, Canada Department of Agriculture, Ottawa, and the Saskatchewan Museum of Natural History, Regina. These herbaria are indicated by the symbols DAO and SMNH.

Determinations were checked by Dr. Bernard Boivin of the Research Branch, Canada Department of Agriculture, Ottawa. I should like to extend my sincere thanks to Dr. Boivin for his kindly help and encouragement. I am also thankful to Mr. H. Kelly of Tantallon and to Mr. and Mrs. F. Swanson of Whitewood, whose intimate knowledge and inter-

est in their localities gave me access to interesting areas.

The writer hopes to add to this list as he continues his research in the ecology of the vegetation of the Qu'Appelle Valley, and would appreciate learning of any additional locations or species of fern in this part of Saskatchewan.

OPHIOGLOSSACEAE

Botrychium lunaria (L.) Sw., Moonwort. 752. Immature sterile and fertile blades. Moist, richly-wooded coulee. Rare. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Aquilegia canadensis* var. *eminens*, *Linnaea borealis* var. *americana*, *Viburnum lentago*, *Bryum pseudotriquetrum*. East of Tantallon, June 30, 1960.

Botrychium virginianum (L.) Sw., Rattlesnake-Fern. 222. Mature fertile and sterile fronds. Moist, densely-wooded area. Near rich stand of Ostrich-Fern. Uncommon. Associated flora: *Populus balsamifera*, *Actaea rubra* including forma *neglecta*, *Viburnum trilobum*. One mile north of Crooked Lake, July 27, 1959.

—351. DAO. Mature sterile frond, fertile blade absent. Moist, richly-wooded coulee. Near small stand of Ostrich-Fern. Uncommon. Associated flora: *Populus balsamifera*, *Quercus macrocarpa* (on slope), *Aquilegia canadensis* var. *eminens*, *Prunus virginiana*, *Bryum pseudotriquetrum*. East of Tantallon, August 3, 1959.

—269. Mature sterile frond, fertile blade absent. Open woods in coulee. Not common. Associated flora: *Populus tremuloides*, *Salix* sp., *Cornus americana*, *Pyrola secunda*, *Equisetum arvense*. East of Craven, August 19, 1959.

—751. DAO. SMNH. Mature sterile fronds, immature fertile blade, Moist woods, in shaded coulee. Not common. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Viburnum lentago*, *Pyrola secunda*. Cutarm Valley, east of Tantallon, June 30, 1960.

—922. Mature sterile frond and fertile blades. Moist woods in shaded coulee, near margin of boggy meadow. Not common. Associated flora: *Populus balsamifera*, *Salix* sp., *Parnassia palustris* var. *neogaea*, *Lobelia kalmii*. Springcreek Coulee, north of Crooked Lake, August 26, 1960.

POLYPODIACEAE

Cystopteris fragilis (L.) Bernh., Fragile Fern. 270. DAO. Immature fronds, sporangia absent. Moist woods. Near small stand of Ostrich-Fern. Not common. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Caltha palustris*, *Brachythecium* sp. (sterile). East of Tantallon, August 3, 1959.

—825. DAO. SMNH. Mature, Extensive stand along stream in heavily grazed open habitat, under *Salix discolor*. Associated flora: *Salix* sp., *Amelanchier alnifolia*, *Primula incana*. North of Bridgeford, July 20, 1960.

Matteuccia struthiopteris (L.) Tod. var. *pensylvanica* (Willd.) Morton, Ostrich-Fern, 232. DAO. SMNH. Mature sterile fronds, immature fertile frond. Fertile fronds from previous year still present with sporangia. Woods, damp soil subject to spring flooding. Large stand. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Mnium*

affine. Six miles east of Crooked Lake, July 27, 1959.

—252. Mature sterile fronds, fertile fronds absent. Moist, richly-wooded coulee on sandy soil along stream. Extensive stand. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Actaea rubra* including forma *neglecta*, *Mnium affine*, *Conocephalum conicum*. South shore of Round Lake, August 2, 1959.

—248. DAO. SMNH. Mature sterile fronds, fertile fronds absent. Open wooded coulee, on dry grassy hummocks subject to spring flooding. Common. Suffering from drought. Habitat altered by landslide. Associated flora: *Salix* spp., *Populus tremuloides*, *Carex rostrata*, *Mnium affine*. Two miles north of cement bridge, half way between Round and Crooked Lakes, August 2, 1959.

—259. DAO. SMNH. Mature sterile and fertile frond. Moist wooded coulee. Small stand along stream. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Botrychium virginianum*, *Aquilegia canadensis* var. *eminens*, *Brachythecium* sp. (sterile), *Bryum pseudotriquetrum*. East of Tantallon, August 3, 1959.

—172. DAO. SMNH. Mature sterile and immature fertile fronds. Moist woods in deep coulee. Small stand near stream. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Mertensia paniculata*, *Pyrola secunda*. Bear Creek, east of Tantallon, August 3, 1959.

—358. DAO. SMNH. Mature sterile, immature fertile fronds. Open wooded coulee, on damp alluvial soil near intermittent stream. Small partly damaged stand. Associated flora: *Populus tremuloides*, *Viburnum trilobum*, *Acer negundo* var. *interius*, *Prunus virginianum*, *Viola rugulosa*. South shore of Katepwa Lake, August 24, 1959.

—862. DAO. SMNH. Mature sterile fronds, fertile fronds absent. Moist wooded area, near margins of stream. Extensive stand. Associated flora: *Populus balsamifera*, *Acer negundo* var. *interius*, *Ribes americanum*, *Viburnum trilobum*, *Parnassia palustris* var. *neogaea*. Shore of Crooked Lake, July 29, 1960.

Hooded Ladies' Tresses



Photo by W. C. McCalla

Spiranthes romanzoffiana Cham. & Schl.

The Hooded Ladies' Tresses is a species of wide distribution in Canada. It is found from Newfoundland and Nova Scotia to British Columbia and Yukon. It is the most northern member of its genus and it is the only member of the Orchid Family found in Northern Saskatchewan by G. W. Scotter in the following article. It grows in bogs and wet meadows. The flowers are white and sweet-scented.

Botanical Collections in the Black Lake Region of Northern Saskatchewan (1960)

by George W. Scotter, Canadian Wildlife Service, Edmonton

The author spent the field season of 1960 in the Black Lake region of northern Saskatchewan studying the effects of fire on the winter range of the barren-ground caribou (*Rangifer arcticus*). This project was sponsored by the Canadian Wildlife Service of the Department of Northern Affairs and Natural Resources. Special emphasis was placed on botanical investigations such as plant succession following forest fires and on the carrying capacities of range plants.

The study area was located in the Black Lake region of northern Saskatchewan. It extended from 59° N. to 60° N. latitude and from 104° W. to 106° W. longitude. The localities from which specimens were collected are:

Black Lake	59° 08' N	105° 33' W
Chipman Lake	59° 24' N	105° 17' W
Dodge Lake	59° 48' N	105° 38' W
Faraud Lake	59° 44' N	105° 08' W
Father Lake	59° 35' N	105° 22' W
Grove Lake	59° 27' N	104° 20' W
Higginson Lake	59° 21' N	104° 44' W
Marchant Lake	59° 43' N	106° 00' W
McKeever Lake	59° 55' N	105° 14' W
Newnham Lake	59° 06' N	104° 30' W
Oblate Lakes	59° 49' N	104° 30' W
Offset Lake	59° 50' N	104° 10' W
Stony Rapids	59° 16' N	105° 50' W

No comprehensive botanical exploration has been carried out in this area previously and a number of the species collected represent new records or north or northeastern range extensions for the province of Saskatchewan. The plants collected by H. M. Raup (1936) in the Lake Athabasca region form the only large collection reported from northern Saskatchewan. The collection reported here is east of the region visited by Raup. With the exceptions of scattered collections by Preble (1908) and Tyrrell (1908), the flora in this region appears to be unknown botanically. This list, therefore, will add to our knowledge of the provincial flora.

"An Annotated List of the Plants of Saskatchewan," prepared by Fraser et al. (1954) was useful in determining plant distribution, as was the "Annotated Catalogue of Vascular Flora of Saskatchewan," published by Breitung (1957). Both publications

depended almost entirely on Raup's work for plant records in this region of Saskatchewan.

The geology of the area is discussed in a paper prepared by Alcock (1936). North of the Fond du Lac River and Black Lake the rocks are an old Precambrian metamorphic assemblage. The rocks are considerably folded and faulted and are variable over relatively short distances. South of this area the rock is predominantly Athabasca sandstone of a later Precambrian age. It is uniform over considerable distances and is relatively unfolded.

There is little climatic data available for the area. The climate is characterized by long cold winters and short warm summers. The average length of the frost-free period is approximately 90 days. Summer rainfall is low throughout the area.

The southern section of the region supports jack pine forests while the northern section supports black spruce forests. White birch forests are abundant in fire-disturbed regions that formerly supported black spruce forests. A small aspen forest was present north of Stony Rapids.

The specimens reported in this collection can be found in the Canadian Wildlife Service Herbarium at Edmonton. Vascular plant specimens were sent to the Herbarium of the Canada Department of Agriculture and moss and club moss specimens were given to the National Museum of Canada.

The author wishes to acknowledge the assistance of L. E. Erickson in the field. I am also grateful to Dr. H. A. Crum, to Dr. A. E. Porsild, and to the staff of the Plant Research Institute, Ottawa, for identifying or verifying the identification of the mosses, club mosses, and vascular plants, respectively.

MUSCI

Sphagnum capillaceum (Weiss.) Schrank—Higginson L. 368.

Sphagnum capillaceum var. *tenellum* (Schimp.) Andr.—Higginson L. 369.

Andreaea rupestris Hedw.—Faraud L. 380.

Polytrichum commune Hedw.—Higginson L. 395, Father L. 404.

Polytrichum juniperinum Hedw.—Higginson L. 367, McKeever L. 377, 378, and 379, Newnham L. 381 and 383.

Polytrichum juniperinum var. *alpestro* (Hoppe) BSG—Newnham L. 405.

Polytrichum piliferum Hedw.—Higginson L. 370, Oblate L. 371 and 374, Newnham L. 382.

Ceratodon purpureus (Hedw.) Brid.—Higginson L. 370, Oblate L. 371, 372, and 373, McKeever L. 375 and 386, Oblate L. 388.

Pleurozium schreberi (Brid) Mitt.—Higginson L. 380 and 394.

Dicranum elongatum Schleich.—Grove L. 397.

Dicranum rugosum (Hoffm.) Brid.—Higginson L. 393.

Hedwigia ciliata Hedw.—Father L. 402.

Aulacomnium palustre (Hedw.) Schwaegr.—Father L. 403.

Ptilium crista-castrensis (Hedw.) DeNot.—Grove L. 398.

Neckera pennata (L.) Hedw.—Faraud L. 384.

HEPATICAEE

Ptilidium ciliare (L.) Nees—Higginson L. 392, Grove L. 394, Newnham L. 406.

Marchantia polymorpha L.—McKeever L. 376, Faraud L. 385.

POLYPODIACEAE

Woodsia ilvensis (L.) R. Br.—Dry rocky area. Faraud L. 535.

Dryopteris disjuncta (Ledeb.) C. V. Morton—Collected below a seepage area on a rock slope. Grove L. 445.

Dryopteris fragrans (L.) Schott.—Found on exposed rock outcrop. Chipman L. 611.

Cryptogramma crispa (L.) R. Br. var. *acrostichoides* (R. Br.) C. B. Clarke—Rare plant on rocky slopes. Higginson L. 422, Marchant L. 599.

EQUISETACEAE

Equisetum sylvaticum L.—Common in recent burns. McKeever L. 506.

Equisetum sylvaticum L. var. *multiramum* (Fern.) Wherry—Common on moist areas in recent burns. Oblate L. 485.

Equisetum fluviatile L.—Common in marshes and along lake shores

throughout area. Oblate L. 400, McKeever L. 513, Dodge L. 602, Chipman L. 622.

Equisetum scirpoides Michx.—Found in boggy black spruce sites. Faraud L. 511.

LYCOPODIACEAE

Lycopodium annotinum L. var. *pungens* (La Pyl.) Desv.—Occasional in black spruce forests. Higginson L. 389 and 391.

Lycopodium obscurum L.—Infrequent on recent burns. Little Faraud L. 401.

Lycopodium complanatum L.—Frequent in young birch stands. Oblate L. 387, Higginson L. 395, Faraud L. 400.

PINACEAE

Picea glauca (Moench) Voss—Found only along the Fond-du-Lac River near Stony Rapids and a few representatives at Faraud L. and Black L.

Picea mariana (Mill.) BSP—An ubiquitous tree on upland and muskeg sites.

Larix laricina (Du Roi) Koch—Common in muskegs throughout area. Grove L. 439.

Pinus banksiana Lamb.—Abundant on sandy soils south of Black L.

Juniperus communis L. var. *depressa* Pursh—On sand soils in open areas. Grove L. 443.

GRAMINEAE

Festuca saximontana Rydb.—Roadside collection. Stony Rapids 567.

Poa pratensis L.—Moist areas near lakes. Offset L. 476, Stony Rapids 516.

Poa interior Rydb.—On open rocky outcrops. Faraud L. 533, Dodge L. 600.

Poa palustris L.—Townsite collection. Stony Rapids 555.

Poa glauca Vahl—Infrequent in recent burns and in mature birch stands. Grove L. 427, McKeever L. 502.

Agropyron trachycaulum (Link) Malte—Rare in townsite of Stony Rapids 562.

Hordeum jubatum L.—Abundant in near old camp sites along Fond-du-Lac River. Stony Rapids 560 and 561.

Deschampsia caespitosa (L.) Beauv.—Along moist road side. Stony Rapids 566.

Calamagrostis purpurascens R. Br.—Rare on sandy ridge. Dodge L. 605.

Calamagrostis canadensis (Michx.) Beauv.—Abundant on recent burns throughout area. Oblate L. 496. Little Faraud L. 522, Stony Rapids 557.

Agrostis scabra Willd.—Common in moist areas and on recent burns. Little Faraud L. 527, Faraud L. 534, Stony Rapids 556.

Alopecurus aequalis Sobol.—Common along moist road side. Stony Rapids 565 and 573.

Beckmannia syzigachne (Steud.) Fern.—Wet area near road side. Stony Rapids 580.

CYPERACEAE

Eriophorum spissum Fern.—Infrequent in moist muskeg site. Offset L. 452.

Eriophorum angustifolium Honck.—Infrequent in moist muskegs. Stony Rapids 550.

Scirpus caespitosus L. var. *callosus* Bigel.—Moist site near lake shore. Faraud L. 538.

Scirpus hudsonianus (Michx.) Fern.—Lake shore collection. Faraud L. 537.

Carex foenea Willd.—Along sandy beach margins. Higginson L. 415.

Carex siccata Dewey—Found on a sandy beach at Dodge L. and in dry birch forests. Stony Rapids 584, Dodge L. 604, Father L. 607.

Carvex loliacea L.—Infrequent in mature birch stands. Oblate L. 487, Faraud L. 547.

Carex brunnescens (Pers.) Poir.—Infrequent in moist areas. Grove L. 447, Oblate L. 473.

Carex canescens L.—Abundant on the edge of muskegs throughout the area, also occurred on recent burns. Offset L. 455, McKeever L. 508, Little Faraud L. 530, Stony Rapids 585.

Carex aenea Fern.—Abundant carex on recent burns. Oblate L. 477, Little Faraud L. 524, Newnham L. 615.

Carex deflexa Hornem.—Common on recent burns throughout area. Grove L. 426 and 435, Oblate L. 486, Dodge L. 601.

Carex paupercula Michx.—Muskeg areas in region. Offset L. 461, Oblate L. 482.

Carex media R. Br.—Moist areas in black spruce forests. Oblate L. 488, Faraud L. 539.

Carex aquatilis Wahl.—Widely distributed in marshes throughout

area. Offset L. 456 and 462, McKeever L. 498, Faraud L. 540.

Carex rostrata Stokes—Common on boggy areas. Stony Rapids 551 and 579.

JUNCACEAE

Juncus vaseyi Engelm.—On the margins of muskegs and bogs. Stony Rapids 549 and 587.

Juncus balticus Willd.—Located on sandy shore. Newnham L. 617.

Luzula multiflora (Retz.) Lej.—Rocky island in McKeever L. This collection extends the known northern range in Saskatchewan. McKeever L. 514.

LILIACEAE

Smilacina trifolia (L.) Desf.—Rare in wet black spruce muskegs. Oblate L. 446.

ORCHIDACEAE

Spiranthes romanzoffiana Cham. & Schl.—Rare in wet black spruce bogs. This record is an extension of the northern range in Sask. Stony Rapids 597.

SALICACEAE

Populus tremuloides Michx.—Scattered individuals throughout area except for a large stand near Stony Rapids.

Populus balsamifera L.—Infrequent on wet ground near lake shores. Grove L. 438.

Salix glauca L.—Frequent throughout region in muskeg and other moist sites. Higginson L. 420, Offset L. 453 and 460, Oblate L. 479 and 494.

Salix myrtillofolia Anderss.—Frequent in black spruce forests and in young birch forests throughout the region. Higginson L. 421, Grove L. 431, Faraud L. 520.

Salix? pseudomonticola Ball—Rare along streams in mature birch forests. Oblate L. 489.

Salix pyrifolia Anderss.—Found in recent burns and in moist forests. Grove L. 432 and 437B, Offset L. 471.

Salix bebbiana Sarg.—The largest willow found in the area. Infrequent in black spruce forests. Oblate L. 475.

Salix planifolia Pursh—Frequent along streams and lake edges. Offset L. 470, Faraud L. 536.

Salix arbusculoides Anderss.—Common willow on the margins of streams and lakes. Offset L. 459, McKeever L. 500.

MYRICACEAE

Myrica gale L.—Abundant on the margins of lakes and muskegs throughout region. Offset L. 469, Oblate L. 493, McKeever L. 501, Dodge L. 603.

BETULACEAE

Betula papyrifera Marsh.—Abundant as a seral stage in burnt areas. Higginson L. 423.

Betula papyrifera Marsh var. *resinifera* (Regal) Fern & Raup—Associated with mature black spruce forests. Grove L. 437A.

Betula papyrifera Marsh var. *humilis* (Regal) Fern. & Raup—Common on recent burns. Higginson L. 412.

Betula glandulosa Michx.—Rare in forests and frequent in muskegs. Grove L. 436, Offset L. 454 and 468, Oblate L. 484.

Alnus crispa (Ait.) Pursh.—Abundant on south slope in black spruce and jack pine forests. Higginson L. 419, Offset L. 467.

Alnus tenuifolia Nutt.—Abundant along the Fond-du-Lac River. Stony Rapids 608.

SANTALACEAE

Geocaulon lividum (Richards) Fern.—Common throughout area, but most abundant in jack pine forests. Offset L. 466, Faraud L. 512, Stony Rapids 595.

POLYGONACEAE

Rumex occidentalis S. Wats.—Infrequent along roadside. Stony Rapids 581.

NYMPHAEACEAE

Nuphar variegatum Engelm.—Abundant in sheltered lakes and streams throughout area. McKeever L. 504.

RANUNCULACEAE

Anemone patens L. var. *multifida* Pritzl.—A rare plant found only on grassy slopes near fishing camps. Black L. 407.

Ranunculus lapponicus L.—Rare in mature birch stands that occur along stream channels. Grove L. 448, Faraud L. 541.

Ranunculus abortivus L.—Rare in mature birch stands that occur near streams. Stony Rapids 576.

FUMARIACEAE

Corydalis sempervirens (L.) Pers.—Frequent plant in recent burns. Grove L. 441.

Corydalis sempervirens (L.) Pers. f. *candida* Lakela—Frequent in burnt areas. Oblate L. 478.

CRUCIFERAE

Draba nemorosa L.—Dry grassy slopes. Black L. 408. Stony Rapids 569.

Lepidium bourgeauanum Thell.—A common weed in the townsite. Stony Rapids 554.

SAXIFRAGACEAE

Saxifraga tricuspidata Rottb. — Infrequent on rocky ridges. Grove L. 425, McKeever L. 503.

Ribes oxyacanthoides L.—Infrequent on rocky hillside. Chipman L. 610 and 623.

Ribes hudsonianum Richardson—Infrequent in a mature white spruce forest near the Fond-du-Lac River. Stony Rapids 609.

Ribes glandulosum Grauer—Common on burnt areas. Grove L. 442, Oblate L. 480, McKeever L. 505, Little Faraud L. 526.

PARNASSIACEAE

Parnassia palustris L. var. *neogaea* Fern. (*P. obtusiflora* (Rupr.) E. M. Love)—Moist black spruce forest sites. Stony Rapids 571, Newnham L. 612.

ROSACEAE

Amelanchier alnifolia Nutt.—Collected in an aspen forest north of the Fond-du-Lac River. Stony Rapids 588.

Rubus idaeus L. var. *aculeatissimus* Regel & Tiling—Common on recent burns and frequent in mature birch forests. McKeever L. 499 and 509, Faraud L. 545.

Rubus chamaemorus L.—Common in muskegs. Higginson L. 417, Offset L. 472.

Rubus acaulis Michx.—Frequent on moist black spruce and birch sites. Oblate L. 491, Stony Rapids 586.

Fragaria vesca L.—Roadside collection. This collection extends the northern range of this plant in Saskatchewan. Stony Rapids 575.

Potentilla norvegica L.—Common in disturbed areas. McKeever L. 515, Stony Rapids 553 and 577, Dodge L. 606, Chipman L. 621.

Potentilla palustris (L.) Scop.—Infrequent in moist aspen and black spruce forests. Grove L. 444, Stony Rapids 592.

Potentilla tridentata Ait.—Infrequent on rock outcrops and on recent

burns. Stony Rapids 594, Newnham L. 616.

Geum perincisum Rydb.—North slope near Fond-du-Lac River. Stony Rapids 583.

Rosa bourgeauiana Crep.—Common along ditch banks. Stony Rapids 572.

Prunus pensylvanica L. f.—Frequent on dry hillsides. Little Faraud L. 523, Faraud L. 522.

EMPETRACEAE

Empetrum nigrum L. var. *hermaphroditum* (Lange) Sorensen—Common on sphagnum moss throughout the black spruce forests in this region. Higginson L. 418.

ELAEAGNACEAE

Shepherdia canadensis (L.) Nutt.—Infrequent in moist areas. Stony Rapids 598.

ONAGRACEAE

Epilobium angustifolium L. (*Chamaenerion angustifolium* (L.) Scop.)—Ubiquitous on burnt areas. Little Faraud L. 525.

Epilobium glandulosum Lehm. var. *adenocaulon* (Haussk.) Fern.—Raup reported this plant common in sloughs and wet meadows, but it was only collected on a dry hillside. Little Faraud L. 529.

ARALIACEAE

Aralia nudicaulis L.—Frequent in aspen forests. Stony Rapids 596, Black L. 624.

CORNACEAE

Cornus canadensis L.—Frequent in open black spruce and jack pine forests. Stony Rapids 559.

PYROLACEAE

Moneses uniflora (L.) A. Gray—Frequent in moist black spruce sites. Faraud L. 543.

Pyrola secunda L. (*Orthilia secunda* (L.) House)—Frequent in moist birch and muskeg sites. Faraud L. 521 and 548.

Pyrola virens Schweigger—Rare in moist birch forests. Faraud L. 542.

Pyrola asarifolia Michx.—Infrequent in aspen forests north of the Fond-du-Lac River. Stony Rapids 593.

ERICACEAE

Ledum groenlandicum Oeder—Abundant throughout region. Offset L. 449.

Ledum palustre L. var. *decumbens* Ait.—Infrequent on exposed cliffs

and rocks in black spruce forests, but not present in muskegs as reported by Raup. Grove L. 428 and 440, Offset L. 464.

Loiseleuria procumbens (L.) Desv.—Rare on a dry, open site above a muskeg. This plant is new to the flora of Saskatchewan. Little Faraud L. 531.

Kalmia polifolia Wang.—Abundant in muskegs. Grove L. 429, Oblate L. 483.

Andromeda polifolia L. — Abundant in muskegs. Higginson L. 413, Grove L. 429.

Chamaedaphne calyculata (L.) Moench—Frequent along lake shores and in muskegs. Higginson L. 414. Offset L. 463, Little Faraud L. 528.

Arctostaphylos uva-ursi (L.), Spreng.—Common on sandy hillsides in jack pine forests. Black L. 409.

Vaccinium uliginosum L.—Common in moist areas near muskegs and lakes. Offset L. 458 and 465.

Vaccinium myrtilloides Michx.—Abundant in jack pine forests. Offset L. 457, Newnham L. 618 and 620.

Vaccinium vitis-idaea L. var. *minus* Lodd.—Abundant in muskegs and on dry upland sites. Black L. 410.

Vaccinium oxycoccus L.—Infrequent on moss in west muskegs. Offset L. 450.

MENYANTHACEAE

Menyanthes trifoliata L.—Common in shallow water near lake margins. Oblate L. 476, Faraud L. 518.

SCROPHULARIACEAE

Pedicularis labradorica Wirsing—Rare in muskegs. This is a new addition to the flora of Saskatchewan. McKeever L. 510.

LENTIBULARIACEAE

Pinguicula villosa L.—Rare on sphagnum moss in muskegs. Offset L. 451.

RUBIACEAE

Galium trifidum L.—Infrequent in moist birch stands. Faraud L. 544.

CAPRIFOLIACEAE

Viburnum edule (Michx.) Raf.—Infrequent near streams in birch stands. Oblate L. 492.

Linnaea borealis L. var. *americana* (Forbes) Rehd.—common on sandy soils in jack pine forests. Grove L. 424.

Campanula rotundifolia L.—Common throughout townsite. Stony Rapids 582.

COMPOSITAE

Solidago spathulata DC.—Rare in opening of an aspen forest north of Fond-du-Lac River. This extends the known northern range in Saskatchewan. Stony Rapids 591.

Aster laevis L.—Roadside collection. This plant was reported at McMurray, Chipewyan and L. Mamawi by Raup. This collection extends the range into northern Saskatchewan. Stony Rapids 574.

Aster ciliolatus Lindl.—Rare in moist areas of a mixed black spruce and jack pine forest. Stony Rapids 570.

Achillea sibirica Ledeb.—Rare on a rock outcrop. This collection is a northern extension of the known range in Saskatchewan. Newnham L. 613.

Achillea lanulosa Nutt.—Roadside collection. Stony Rapids 558.

Matricaria matricariodes (Less.) Porter—Common on abandoned campsites. Stony Rapids 564.

Petasites palmatus (Ait.) A. Gray—Infrequent on moist areas. Oblate L. 481, McKeever L. 507.

Petasites vitifolius Greene—Common in townsite and along road ditches. Stony Rapids 578.

Petasites sagittatus (Pursh) A. Gray—Rare in moist areas of a birch forest. McKeever L. 497.

Senecio pauperculus Michx. var. *flavovirens* (Rydb.) Boivin — Infrequent in an aspen forest north of the Fond-du-Lac River. Stony Rapids 589.

Taraxacum dumetorum Greene—Rare on a rocky island. McKeever L. 517.

Taraxacum officinale Weber — Common in the townsite. Stony Rapids 553.

Hieracium scabriusculum Schwein. — Infrequent on rock outcrops and in aspen forests. Stony Rapids 590, Newnham L. 614.

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Large-flowered Hemp Nettle

(Galeopsis speciosa)

by E. H. Moss, Edmonton

Many readers of the *Blue Jay* are doubtless acquainted with the Common Hemp Nettle, *Galeopsis tetrahit*, an introduced weed of waste places, roadsides and fields. Perhaps few know that it is of hybrid origin, the parent species being *G. pubescens* and *G. speciosa*. This was shown some thirty years ago by Muntzing in Sweden. By crossing the two parent species Muntzing obtained a plant which, though highly sterile, was successfully back-crossed to *G. pubescens*. The latter cross gave a fertile plant which was indistinguishable from *G. tetrahit*, a species long known in nature.

The main purpose of this note is to report the occurrence of *Galeopsis speciosa*, the Large-flowered Hemp Nettle, in Alberta. During the summer of 1960 specimens came to hand from two localities near Edmonton.

Dr. G. H. Turner submitted specimens collected near Fort Saskatchewan. From Mr. George Pegg came plants found near Heatherdown, some thirty miles northwest of Edmonton. The species is said to be prevalent at Heatherdown and to be spreading there. These collections appear to represent the first records of the species for Alberta, and possibly for Canada, apart from a collection made at Millet (30 miles south of Edmonton) in 1928. The latter collection, reported to the writer by Dr. C. Frankton, is in the herbarium of the Department of Agriculture, Ottawa. Dr. A. E. Porsild has informed Dr. Turner that there are no Canadian collections of the species in the National Herbarium, Ottawa.

The Large-flowered Hemp Nettle may be expected in other parts of western Canada. Moreover, it may

prove to be an aggressive weed in certain regions. The plant is at once distinguishable from the common hemp nettle by its much larger and markedly yellow flowers. Its corolla is an inch or more long, pale yellow with a violet spot on the lower lip, the tube much longer than the calyx.

In contrast, the corolla of the Common Hemp is less than an inch long, pink or white or variegated, often with two yellow spots, and the tube rarely exceeds the calyx. The stem of the Large-flowered Hemp Nettle is more uniformly bristly-hairy than is that of the other species.

Large Stone Contest

by W. O. Kupsch, University of Saskatchewan, Saskatoon

Field stones, which are so abundant in the settled part of Saskatchewan, and which cause farmers much grief by their presence, are of interest because they were transported to their present site by flowing glacier ice, which covered most of the province until about 10,000 years ago. Geologists refer to giant rocks bigger than a house. The largest in Western Canada, and possibly in the world, is undoubtedly "Big Rock" near Okotoks, Alberta. This erratic, brought onto the plains by a glacier coming from the Rocky Mountains, measures 135 x 60 x 30 feet and weighs over 18,000 tons!

Although nothing of such a tremendous size as "Big Rock" is known from Saskatchewan, the writer believes that a record is needed on large field stones in this province. It is, of course, difficult to define "large" in this respect, but any stone that can be moved by man power or ordinary farm machinery is not worth considering. For convenience, let it be arbitrarily established that the smallest dimension of a "large" stone should be at least the height of a man, or about 6 feet.

If you know of any "large" field stones within the boundaries of Saskatchewan, you are invited to take part in a contest to determine where the largest erratic is located. All you have to do is to provide me with the following:

1. Location of the stone as to section, township, range and the distance and direction to the nearest town. Give me the name of the rock, if a local name is commonly applied to it.

2. The dimensions of the stone measured with a tape. This will, of necessity, be only a rough measure

because stones are not square boxes. Try, however, to get length, width, and height, as fairly as possible.

3. A chip of the rock, knocked off with a hammer, about the size of a base ball.

The parcel containing the chip and the information can be sent collect to my address, so no costs are involved for you. The reporters of the three largest stones will each receive a copy of the Glacial Map of Canada, which tells you of the changes made by glaciers to the face of our country, as a prize. The contest will be open until December 31, 1961, because most of us are not likely to get out into the field to look for big erratics until summer and fall. After evaluation of all entries, I will give you a report on the distribution of large erratics in Saskatchewan in a future issue (1962) of the **Blue Jay**.

SNHS SPECIAL PUBLICATIONS

A Guide to Saskatchewan Mammals—by W. H. Beck. Special Publications No. 1. Saskatchewan Natural History Society, Regina, 1958. 50 Cents.

The Birds of the Saskatchewan River, Carlton to Cumberland—by C. Stuart Houston and Maurice G. Street. Special Publications No. 2, Saskatchewan Natural History Society, Regina. 1959. \$1.50.

Order Special Publications from Dr. Stuart Houston, 2401 Hanover Ave., Saskatoon, Sask.

Junior Naturalists

Edited by **Joyce Dew**, Saskatchewan Museum of Natural History



Photo by Joyce Dew

Two young naturalists examine a beaver-cut log in Regina Waterfowl Park.

Name the Mammal Contest Winners

We had a much better response to this contest than to the last with 40 entries sent in. The prize winners were as follows:

Junior Section—

Tom Bryant, Fort Smith, N.W.T., tied with **Dale Robinson**, 1441-8th St., Manitoba, for first prize.

Senior Section—

Shirley Anderson, Rocanville, Sask., whose prize winning paragraph read as follows: "The Grasshopper Mouse lives in the open grasslands. They are rather uncommon and unevenly distributed. They are very useful to us as they feed extensively on insects and upon other mice which are a nuisance to us."

The correct answers to the questions were:

1. Elk or Wapiti
2. Black-tailed Prairie Dog
3. Ord's Kangaroo Rat
4. Northern Grasshopper Mouse
5. Muskrat
6. Thirteen-lined Ground Squirrel

LETTER WRITING CONTEST

Any boy or girl 16 years old and under may enter. Entries must be first hand observation and not something copied from a book or other source. All entries must be accompanied by the name, age and address of the sender. Send entries to Miss Joyce Dew, Saskatchewan Museum of Natural History, Regina, to arrive not later than April 15. Prizes, which are awarded according to age, include field guides and subscriptions to nature magazines.

PRIZE WINNER

It appears that the country children must have been hibernating with the bears this winter. How else can one explain the almost complete lack of letters from them about nature out of doors during the winter? **Ron Austin**, who incidentally is a city dweller, is the only one who wrote about outdoor activities this winter. We are pleased to hear that he ventured out "birding."

The prize winner for this issue is **Tamera Nero** for her life-like sketch of rabbits and her entertaining comments about them.

OUR PET RABBITS

by **Tamera Nero**, age 11, Regina



My sister and I each got a pet rabbit last spring. Mine is a black and white Angora rabbit with a white stripe down its face, and curly hairs on both sides. He has long silky Angora hair which must be combed quite often or he gets little lumps of snarled fur.

Some people say that if you let your rabbits out they will run away. We kept letting our rabbits out and if they ran away we'd put them in the pen. Lorry, my sister, had a harder time for her rabbit used to be very wild and he'd bite, but now he is tame and gentle. In the summer time we could let the rabbits out and they would stay in the yard. If anyone tries to catch them but us they will scoot into the pen. They get lots of food and have a nice yard with trees, grass and clover so they have no reason to run away. It is lots of fun to watch them run around and frolic in our back yard.

When Tippy, our cat, pounces on the rabbits she hits them with her paw and runs away with the rabbits chasing her. One day when my rabbit was chasing Tippy she ran up a tree and got caught between two branches. I shook the tree so she'd fall down and she landed on my rabbit.

PET PIGEONS

by **Bob Kerr**, age 14, Regina

My pets are chiefly show birds. In my collection of pigeons I have a total of eighteen birds, seven of which are show birds. I have two king pigeons which are the size of bantam roosters but all white with feathers on their feet. I have three roller, two black and white, and one red and white pigeon. When the rollers fly they go high in the air and then do

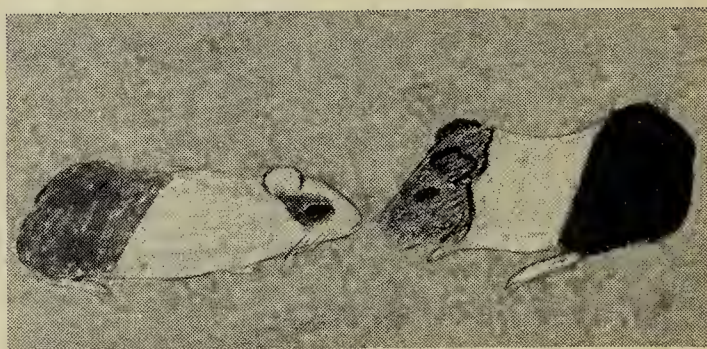
about ten to fifteen somersaults in the air. My most prized possessions are trumpeters. They are about the size of the king but they are grey. Some odd characteristics of these birds are that the feathers on their feet are about six to eight inches long. They also have a crown of raised feathers and have feathers covering their eyes. The rest of my flock consists of checkered birds and bluebars.

OUR PET GUINEA PIG

by **Lorrel Nero**, age 9, Regina

My sister's guinea pig, Tooney, is gold and white and squeaks a lot. Mine, Looney, is black and white and does not squeak a lot. We got these "pigs" a month ago. They are both males. When Major, our dog, chases them he whines a lot. They are the cutest little things I've seen. They eat just as much as we give them. We give them some lettuce and go outside for about ten minutes. When we come back in the lettuce is gone.

Tamera's "pig" was born without hair on one ear and we don't know why. If we put newspaper in their cage they will get it into pieces. We put three carrots in the pen. Tamera's "pig" went and got two for himself and mine stole the one the rabbit had. (The rabbit's name is Snowflake and belongs to a friend of ours.) Then Snowflake did not have a carrot to eat.



BRIEF NOTES

Bryan Lyster of Abernethy, reports having seen and identified 102 birds last year while **Larry Rasmussen** of High River, Alberta, wonders if the contests couldn't be more general in nature instead of being based on Saskatchewan wildlife. **Roberta Forsaith** of Carmichael, reports having seen a Rufous-sided Towhee and wonders if they are uncommon in that part of the province.



*Photo by F. W. Lahrman, SMNH
Saskatchewan Museum of Natural History.*

Junior Naturalists examine contents of nest boxes.

SWALLOW NESTING PROJECT

by Trevor Apperley, age 9, Regina

One day in late fall several members of the Junior Naturalists Club met at the Museum for the purpose of going to the Waterfowl Park to take down birdhouses.

Miss Dew and Mr. Wade took us there in cars. We walked from the car to the place where the bird houses were. These bird houses were put up on fence posts in the early spring so that birds could nest in them. We took the houses down and opened each one. In one we found two eggs. A girl named Irene put them in her pocket. As we were walking back to the car one of them smashed and made such a mess.

On the way back to the cars we found a house which a muskrat had deserted and saw a tern on the water and some Canada Geese in the distance by the bridge. We also saw two cows grazing in a field.

We took the birds houses back to the Museum to store for the winter months.

BIRDING IN WINNIPEG

Ron Austin of Regina reports having spent part of his Christmas holidays birding along the Assiniboine River. His most exciting find was a Blue Jay which he had never seen before. Ron was quite pleased that even though he was away from home there were still birds and mammals to enjoy.

WINDOW LEDGE FAMILY

by Bryan Lyster, age 12, Abernethy, Sask.

One day in early June I was surprised to see that a pair of robins were busily building a nest right on the windowsill of our sun porch. They skilfully wove grass into mud to make a solid foundation. Then they lined the nest with horse-hair.

In a few days the mother robin laid the first egg. Each day there was another egg until there

were four tiny blue eggs in the nest. Now the robins began a long wait the mother spending most of her time on the nest with the father perched nearby. At last on June 30th the eggs were hatched. The parent birds were kept busy supplying worms for the young.

The young were soon feathered and were beginning to look more like robins. Towards the end of July they left the nest. Each day one of them flew away until the nest was empty. Thus ended one of the most interesting nature study lessons I have ever had.

NAME THE BIRD CONTEST

Photos, on following page, by F. W. Lahrman, Saskatchewan Museum of Natural History.

Rules:

1. Any boy or girl 15 or under may enter.

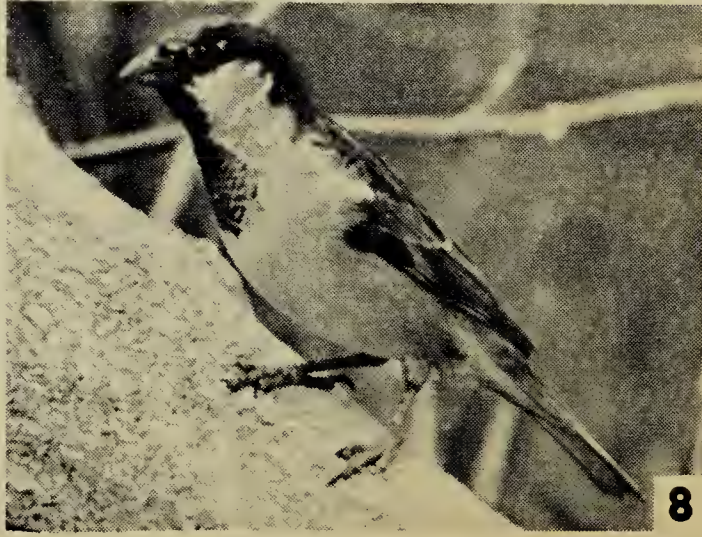
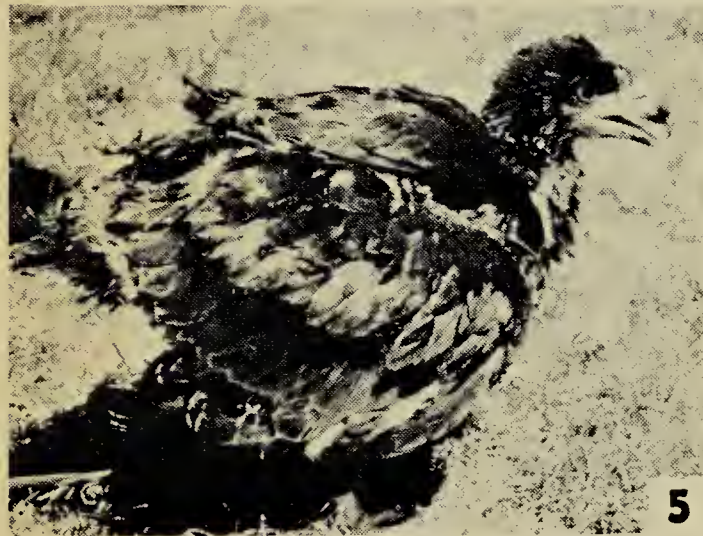
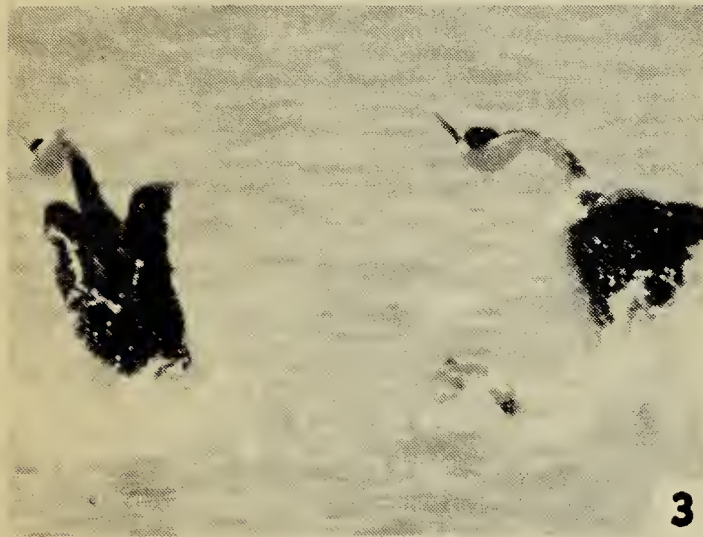
2. Put your name, age, and address at the top of a sheet of paper and number from 1 to 8.

3. Boys and girls of 12 and over must write a paragraph of not more than 50 words about one of the birds in this contest.

4. Send entries to : Miss Joyce Dew, Blue Jay Contest, Saskatchewan Museum of Natural History, Regina, to arrive not later than April 15.

Clues—The correct answers are found in the following list of scrambled names. Some names may be used more than once; others not at all.

itwhe - oaetdrht wor-raps;
dlab aeelg; ragy yaj;
enrtews eergb; aklcb-nda - hweti rawelrb;
sphra - tieald oesgru;
dlaalmr; ugmnniro ovde;
itehw - denworc srwrwpa;
der-aditel wahk; ehsuo wraopsr.



Laboratory Exercise:

The Examination of Starch Grains

by Taylor Steeves and Maureen Rever, University of Saskatchewan, Saskatoon

EDITOR'S NOTE: This article gives instructions for a laboratory exercise which can be carried out by any serious student with a microscope in his school or at home. We hope to have further articles of this kind, and would welcome comments.

A beginning student of biology can carry out an interesting study of starch grains in plants with essentially no equipment other than a compound microscope, even one of limited range. Starch is the most abundant stored food material in the higher plants and, as such, is an important source of food for man. It occurs in the form of small granules or grains easily seen within the cells under a microscope. These grains are especially abundant, and hence easily seen, in plant tissues given over to storage such as tubers, fleshy roots, and endosperm of seeds.

There is a relatively specific staining test which aids in the recognition of starch and which is interesting to carry out even when starch is known to be present. If the material is treated with a solution of iodine and potassium iodide (available at any drug store) a blue coloration can be observed in the starch grains themselves. The staining solution may be prepared as follows: Dissolve one gram of potassium iodide in 100 cubic centimeters of water, preferably distilled. Add one gram of iodine crystals. This is a concentrated stock solution and should be diluted until the final solution has a straw-yellow color before using. Mount the material to be examined directly in the dilute solution.

Starch grains are formed in the cytoplasm of plant cells within specialized bodies known as plastids. These bodies are restricted to plant cells and are not found in animals except in some of the unicellular, flagellated organisms claimed by both botanist and zoologists. Plastids are of three types: chloroplasts, chromoplasts and leucoplasts. Chloroplasts contain chlorophyll and are the structures in which photosynthesis goes on. Chromoplasts contain other pigments and are responsible for certain other plant coloration, notably

in flowers and fruits. Leucoplasts are whitish or colourless, since they contain no pigments; and they are the plastids that form starch grains. The grains are built up by the deposition of layer upon layer within the plastid. The plastid may become very much stretched by this process until it is merely a thin sheath around the grain; and it may even disappear entirely. If this happens, no further additions to the grain can be made. The deposition of starch in leucoplasts is often difficult to see. In leaves and stems above ground, however, the interior tissues often store starch in pale green chloroplasts; and in these the plastid can sometimes be seen because of its colour.

The form of starch grains differs from species to species; consequently it is worth while to examine starch grains in many different plants. It is even possible to identify a plant by its starch grains or to determine from what plant a given sample of starch has been prepared. This procedure is used by food inspectors to detect adulterants in commercial starch preparations. A little work of this type might make an interesting finale for the study of starch grains.

Potato Starch: Cut a potato and place some of the exudate from the cut surface or a thin scraping from the surface in a drop of dilute iodine solution on a glass slide. Cover the preparation with a cover slip.

The starch grains may become quite large, and the layered structure or lamination, can usually be seen quite clearly in grains of potato starch under the microscope. We can see the layers or laminae because they are of varying density and reflect light in differing degrees. They are excentrically constructed, that is their organic centre or hilum is not the geometric centre but lies considerably nearer to one end.

If you push carefully with a needle against the edge of the cover-slip while you are observing, the grains will rotate. This indicates that they are not flat as they appear under the microscope.

Bean Starch: Soak a bean seed to soften the seed coat. Split the bean with a scalpel or sharp knife. Scrape off a small bit of cotyledon from the cut surface and place in a drop of iodine solution on a slide. Cover.

The grains appear oval or circular and slightly flattened. The lamination is very uniform. The hilum is centric. It appears hollowed, more circular in the rounded grains, and elongated in the oval forms. From this radial clefts extend which cut through the layers at right angles. They thin towards the periphery of the grain.

Wheat Starch: Prepare a slide using the endosperm material of Durum wheat (*Triticum durum*). The starch grains are large, circular and discoidly flattened. The hilum is central. Lamination is regular but difficult to see.

Oat Starch: The starch grains found in the endosperm of the oat (*Avena sativa*) are compound. The size of these grains varies as well as the number of grains in each compound grain. The individual grains appear polygonal, separated from each other by definite boundary lines. Numerous small angular grains will likely be seen which result from the breaking up of the compound grains. The hilum and the lamination will not likely be visible.

In the previous examples the starch grains were simple, i.e., only one was formed within a plastid. In other cases the deposition of starch begins in several or many centres within a single plastid. This results in the formation of a compound grain composed of a number of adhering grains.

Tradescantia Starch: If plants of *Tradescantia* (Wandering Jew) or *Zebrina* are available, make a thin cross section of the stem with a razor blade. Mount in water or the iodine solution. Observe the starch grains within the chloroplasts which look pale green around the starch.

Other suggested study materials: Pulp of green banana, barley kernel, rye kernel, corn starch, arrowroot.

Starch grains included in the chloroplasts of *Tradescantia*



Starch grains from a potato tuber showing the hilum and the lamination.



Large and small starch grains of Durum wheat (*Triticum durum*)



Starch grains from the cotyledons of *Phaseolus vulgaris*, the common bean.



Oat starch from *Avena sativa*. A, a compound grain; B, its component grains.



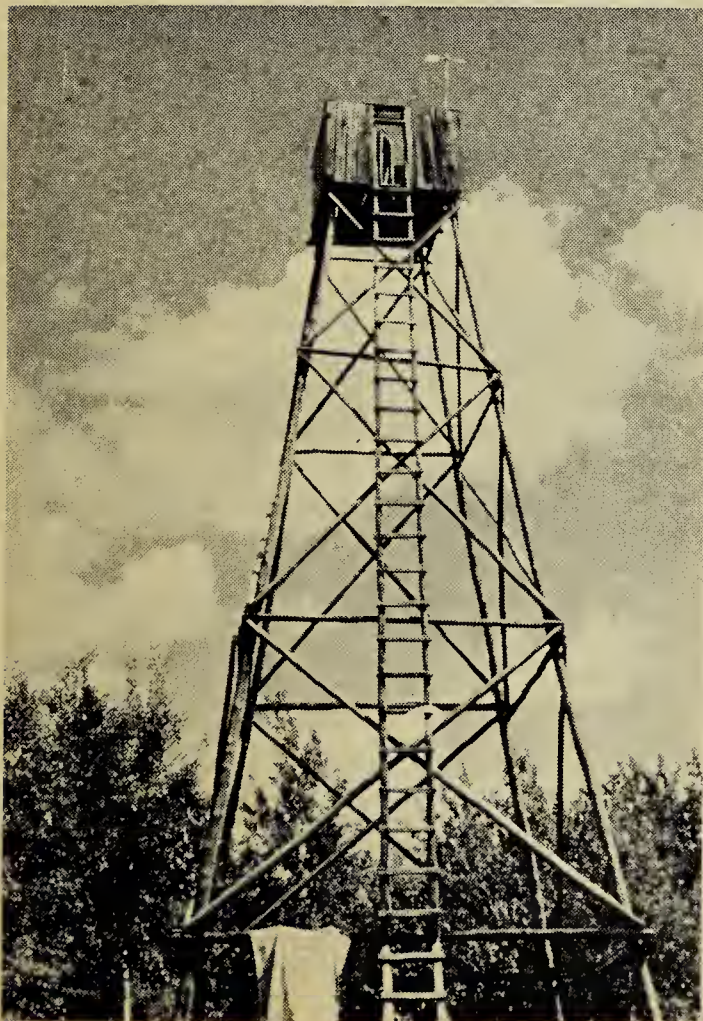
Flying Squirrel Nests in Fire Tower

by S. A. Mernitz, Fish and Game League of Regina



On July 14, 1960, I stopped in at Midnight Tower, manned by Jack Davies. Being a camera fan I asked him, half joking, if he had any wild-life for a photographer. His reply was that on top of the tower a family of Flying Squirrels had been nesting and as the young ones were about

half-grown one or two might still be there. I ascended the wooden 35-footer, which is a secondary fire control tower approximately 50 miles south of Meadow Lake in the Glaslyn district. I found a wooden box used as a seat by the lookout filled with leaves and grass and the two young squirrels. As I tried to lure them out into the open one darted up to the railing of the platform and jumped. I watched it gracefully glide down. The second squirrel, still within the box, was not quite so willing to leave. However, after a little persuasion, it, too, came out and it dashed to the spot where I took the above picture. I was none too soon for the whirring of the shutter must have scared the little fellow. It, too, jumped and sailed down to the trees below.



BOBCAT COLLECTED NEAR REGINA

by Albert Swanston, Saskatchewan
Museum of Natural History

On December 3, 1960, while checking traps in the Bredin vicinity, about 12 miles northwest of Regina, I was very surprised to find that I had trapped a young Bobcat (*Lynx rufus*). Having trapped in this general area for a number of years I was aware that Bobcats were generally

uncommon here. Recently, while talking to Rolland Fenwick of Regina about this record he told me that he had seen two Bobcats this year while bow-hunting for deer in the Qu'Appelle River valley (near the Regina Natural History Society's "Hidden Valley") about 20 miles northwest of Regina. This area is more of a wilderness than is generally suspected, many deep ravines and extensive woods being found especially along the north-facing slopes of the Qu'Appelle valley and in the tributary valleys. Boggy Creek at Bredin, for example, where I took the Bobcat and where Frank Brazier reported a Mountain Lion (**Blue Jay**, 18: 182-183), is rather extensively wooded and deer and other forms of wildlife are numerous throughout these areas. The Bobcat specimen, a half-grown female (weight 6 lbs. 15 oz.) is now in the study collections of the Saskatchewan Museum of Natural History. It is the first known record for the Regina vicinity.

Ed. Note: The range of the Bobcat in Saskatchewan is believed to be limited to the extreme south and southwest, generally south of the Qu'Appelle River on the east, and the South Saskatchewan River (from Elbow) on the west. (Hall and Kelson, 1959. *Mammals of North America*, Vol. II. Ronald Press, N.Y.; Beck, 1958. *A guide to Saskatchewan mammals*. Sask. Natural History Society). This distribution is supported by fur-return records for 1957 (which are based on game manage-

ment zones, thus limiting their usefulness) supplied through the courtesy of T. Harper, Assistant Director, Wildlife Branch, Dept. of Natural Resources. The Bobcat should be considered a rare animal. Further records are needed to establish its actual range and status. —R.W.N.

Summer Record of a Silver-haired Bat in Southern Saskatchewan

by R. W. Nero, Saskatchewan Museum of Natural History

The occasional occurrence of the Silver-haired Bat (*Lasionycteris noctivagans*) on the plains of southern Saskatchewan in summer, presumably as a rare breeding species, even as far south as Govenlock, has previously been noted (**Blue Jay**, 15: 38-41, 46, 121). A most recent record has been obtained for the extreme south-central region. A female Silver-haired Bat was submitted to the Museum for verification and for the record by Ronald Mayer, who reports that he found it at Bengough, Saskatchewan, on June 30, 1960, on the roof of a garage where it had been trapped by one wing caught beneath a loose shingle. Ronald states that this was the first bat which he had seen around the farm for many years.

The Mud Dauber Wasp

by Marion Nixon, Wauchope



This afternoon of December 29, I am reminded of the article I promised, last summer, to prepare for the **Blue Jay**.

The subject of the article appeared "in person" to remind me! Sluggishly wandering along a chair back, after a heavy flight from the chilly windowpane, my unexpected visitor was easily captured under a glass tumbler and is now sitting on a saucer at my side.

It is a long, slim, svelte queen thread-waisted wasp, which has left the sanctuary of our attic, where Mud Dauber nests of various sizes stud the rafters. From the "new look" she wears, her black and gold still unsullied by hard wear, she probably stirred to life in a mistaken belief that furnace heat meant spring.

We have watched her supping on moisture from sides of the glass

snatched hastily from the sink, and she seems to appreciate the grains of sugar slipped under its edges. With long legs dragging behind, or contorted into angular patterns, she squirms along the floor of her glass cage with her mouth applied so intently to the smooth surface she sometimes seems to get stuck . . . and her body arches and erects till she is actually standing on her head, ovipositor waving mildly in the air!

The Mud Dauber Wasp, with its hyphenated physique, has become a familiar resident of this pioneer house since shingles began flaking off from parts of the roof. It doesn't take much of an opening to invite entry by a wasp! We have Yellow Jackets, too, hived between walls where a knot had fallen from an old siding; and when they swarm each summer, we have to keep opening windows to let out individuals that seek their way from the attic via bedroom exits.

There are several initial cells of Yellow Jackets in the attic as well as Mud Dauber nests, often both species within a few inches of each other. But Yellow Jacket queens have never persisted, in the open attic, with their paper-shelled apartment houses, even though these old fir walls sometimes hum like a violin, with hundreds of insects aroused in argument between them! One such disturbance occurred just beyond the head of our bed; we could watch the wasps milling around a knothole high in the wall outside, and everyone was relieved that their angriness subsided without any escape valve being found to the rooms inside!

Mud Daubers never seem so vindictive when excited as do Yellow Jacket Wasps. Fewer are concentrated in their adobe apartment blocks . . . seldom more than a dozen or two cells per nest. So they do not live the communal life of the Yellow Jacket (or Hornet), nor even of the *Polistes* Wasp, with its single floor, upside-down apartment block, which is not enclosed in walls.

The Mud Dauber Wasp, when she feels impelled to found a new generation, seeks out a puddle edged with mud. With the flexible protuberances usually tucked inside her mouth, and her front set of legs, she kneads mud into a ball she can fly away with. She daubs these little pellets of mud

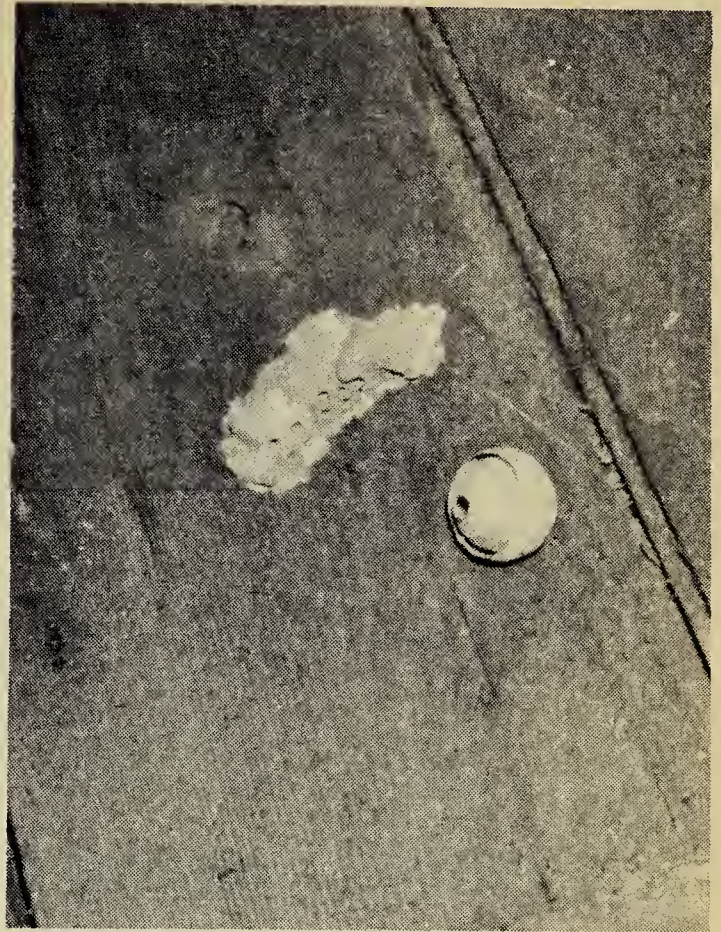


Photo by Marion Nixon

Nests of Mud Dauber (above) and Yellow Jacket.

against a rafter (safe from the wash of rain) much as a swallow would, cementing them together till she has a round cylinder about an inch long inside, and with the diameter of a lead pencil, which is left open at the bottom end. Mud is packed around it, to brace it against the wall, and each cell takes about a day to construct. If her luck is poor, it may take more than one day to fill the cell with food, so while the cell walls dry she starts her hunting.. The prey of the Mud Dauber Wasp is spiders . . . and ONLY spiders. She does not tear one to pieces as a Yellow Jacket will do when feeding on a fly, but anaesthetizes it with her sting. Then she carries it to the cell, stuffs it into the very end, and hunts for more which she pushes in after it. On the last spider stored there, she lays her egg; then she seals off the nest with mud. If it takes more than a day to fill the cell with paralysed spiders, she makes a temporary mud door to hold them in. There may be from a dozen to 30 spiders in one cell, according to their size.

Each cell when filled and closed, is covered with an adobe casing and

another cell built against this. The color of the mud used may differ with the puddle it was taken from . . . just as the paper nest of the Yellow Jacket tribe may have whole sections of wall a dull rosy grey instead of aluminum color . . . the wood pulp from which the paper was made having been nibbled from a red granary!

In three days the Mud Dauber egg hatches into a pale yellow grub. It takes a week to gobble the spiders provided for it . . . still "fresh meat" because they were only paralysed, not dead. In this time it grows six times its size, lines the cell with silk and, head downwards, spins itself a cocoon. This turns brown and shiny, like the inner coat of a peanut. When spring comes . . . or what feels like spring . . . the wasp inside bites itself free, ready to repeat the whole cycle of life again.

The Mud Dauber under my glass is a very fastidious lady. She hates to have mussy feelers, or soiled stockings. Sugar-stickiness seems repugnant to her, for she takes time out to wet her front legs with her mouth, and stroke down her feelers (leaving them with a crisp curl at the end like Christmas ribbon drawn swiftly between finger and thumb). Then her legs are cleaned, one upon the other, and the underside of the palpitating abdomen is also cleaned off by rubbing the back legs down it; then the legs are cleaned one on the other again. Long legs contorted to reach messy spots on wing or abdomen, the mouthing of front legs after they smooth the feelers or face, all make one think of a cat washing its fur.

And our Mud Dauber, *Sceliphron caementarium* (Drury) family Sphecidae, is a really handsome lady, over an inch long, jet black with touches of yellow at collar, epaulets, and in slim lines across the thorax. Her wasp-waist and abdomen are black save where they join, and so are her thighs, but from knee down she wears bright gold stockings with dark garters. Her limbs are exceedingly slim and long; her wings bronze gossamer carried elegantly closed, straight back from her shoulders and held delicately clear of her body. Close observation shows that each leg has its final sections edged with tiny saw teeth, and climaxed by a minute

cross of claws; she is equipped with files to gather material and to smooth it into shape, and claws shaped to help her cling in any position on even glass-smooth surfaces!

Those files may serve another purpose, too, in wounding the spiders she attacks. I have sometimes confined more than one Mud Dauber Wasp within a glass, and watched their reaction to each other. They seem very slow to anger, but when excited one will attack the other when they blunder together in the confined quarters. And it will keep on attacking the same wasp as though determined to kill it. However, though bitten and struck by the ovipositor of the attacker, the "underdog" has never been killed outright in my experience, nor even paralysed for more than a few moments. Stunned by shock, perhaps, and left dozey by the sting; but the attacker also seemed dozey, so it could have been wounded also, or else exhausted by the struggle and perhaps poisoned by its own overstimulation.

After lying still a few moments, the stung wasp would stumble to its feet, gradually regain a normal state of energy, and start climbing the glass wall again. If it blundered into another wasp, it was quite as likely to take the role of the aggressor as to fall prey again, itself. Between the captive Mud Daubers it seemed to be contact that triggered an attack. They did not attack "on sight" nor seemed to hold spite. And I have never been "threatened" by a Mud Dauber, though I am very wary of angry Yellow Jackets, and steer clear of the bigger black-and-white wasps we know as hornets. Luckily, these bald-headed" wasps have never chosen to build their huge paper nests inside our buildings, though we often find them supported by branches of a twiggy underbrush, incorporated as beams within a building) on the outskirts of a bluffy slough.

In my snapshot, taken in our attic, you can see the cell doors of the adobe Mud Dauber's nest, left open when the wasps emerged from their cement rooms. Close by is the initial cell of a Yellow Jacket, its second framework partly constructed. Obviously that queen wasp must have perished, for the paper globe is there yet, still in the same stage.

The Bracken Cairn

A Prehistoric Burial

by **D. R. King** (Archeological Assistant, Glenbow Foundation, Calgary, Alta.)

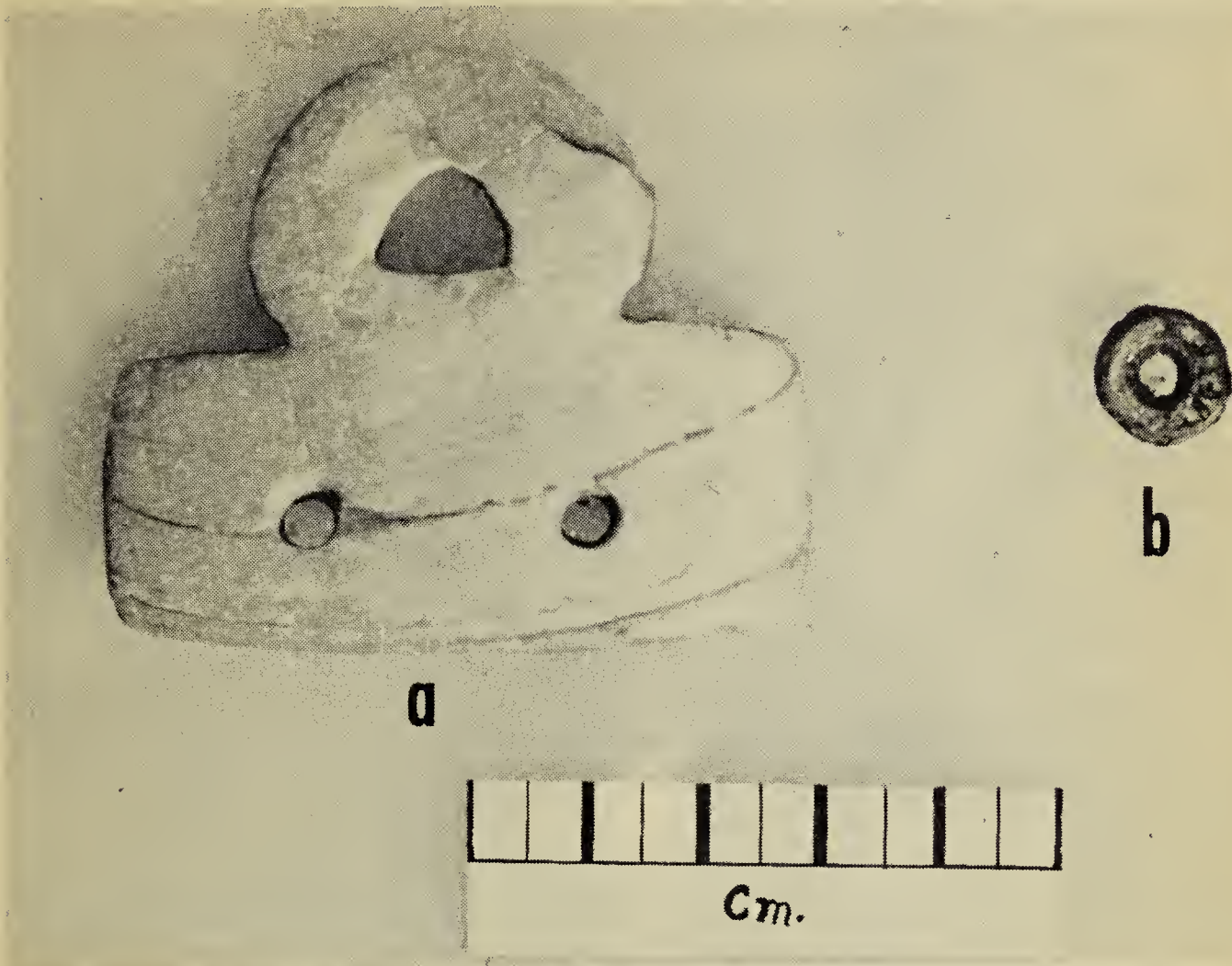


Fig. 1. Shell gorget and bead from the Bracken Cairn.

FOREWORD

While this report has been compiled fully in most instances, it contains many gaps, due mainly to the fact that the site was not systematically excavated, but rather simply dug up by interested collectors. Therefore the material must be related to mental notes of the excavators, and leaves much to be desired. Nevertheless the finders did all in their power to remember and record the sequence and provenience. A lapse in time of two decades from the first excavation to the final removal of all material has made it impossible to accurately analyse the burial, inasmuch as most of the osteological material was badly damaged by backfilling with rocks, premature exposure to air, disturbance of the natural hardpan matrix, and unorthodox excavation methods.

The diggers themselves are the first to admit regret concerning this un-

fortunate situation, but owing to lack of experienced help and counsel at the time of discovery, they proceeded in an unscientific manner. However since responsible bodies have become extant in latter years, they have willingly and gladly placed all material and information at the disposal of the author, in the hope that everything of value may be recovered despite their unsystematic methods. This treatment of an archeological site shows how necessary is the skilled scientific approach to excavation, and it is my earnest hope that the readers may take warning and avoid such practices in the future.

HISTORY OF THE SITE

In the summer of 1936 Mrs. Laura Wright and a group of rock collectors, wandering along the hills above the Frenchman River in the southwest corner of Saskatchewan, came upon a low pile of stones at the top of a

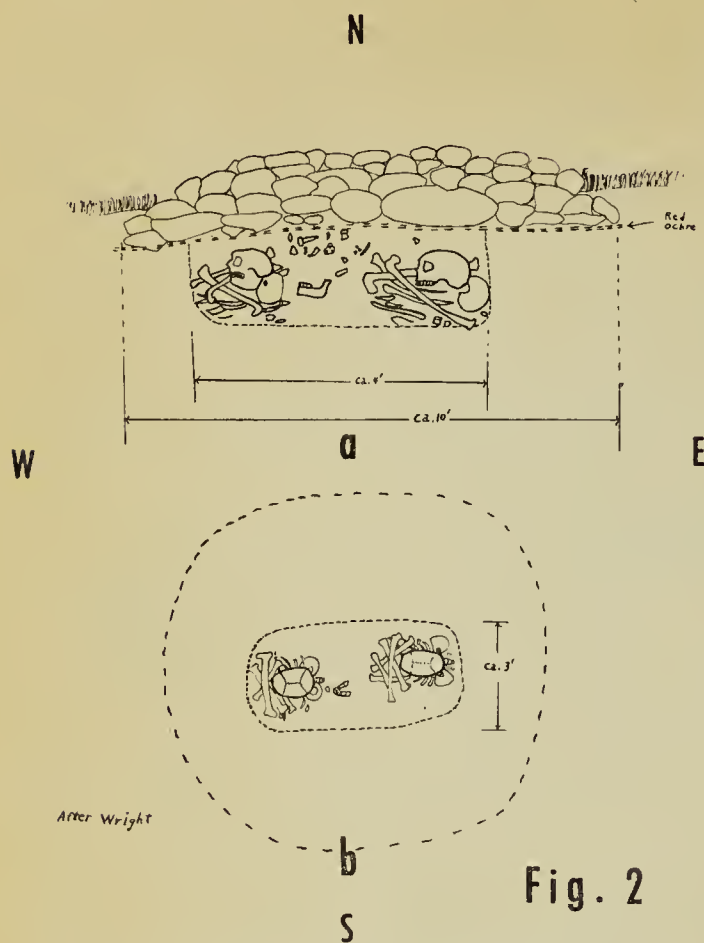


Fig. 2. Bracken Cairn (from sketches by Mrs. Laura Wright).

hill. The stones were deeply imbedded in the sod, but at the northwest site they found some pieces of shell in the dirt thrown out of a gopher hole. When cemented together the pieces formed the largest part of a shell gorget, with only a small portion missing. (Fig. 1-a). Other things distracted the searchers and it was not for 12 years that the cairn was next visited.

In May of 1948 they returned. Mrs. Wright and her brother, Melvin Bakkan, rode back to the hill. Their only tools were a jack knife and a screw driver, and with these implements they began hacking out the sod and roots filling the interstices of the cairn. Chips of chert and flint appeared, with a human tooth and other small human and animal bones. Just below grass roots they came to a layer of reddish sand, quite foreign to the natural soil. This sand, in an even layer about a half an inch in thickness, seemed to cover the entire area. The hardness of the ground made digging difficult and slow with the crude tools, but stone by stone they worked downward. Deep inside the pile they found a stone much larger than the rest, and when this was removed, the top of a human skull was exposed. It took two hours

of careful picking to remove the skull from the cement-like earth. Darkness forced a halt to the work, so when the piece was removed they covered the hole with stones and retired.

The following week they returned to the site and resumed digging. Beneath the skull they found the earth had a dark red colour. The bones below were stained and coated dark red. The whole skeleton was exposed in a compact pile, except for the mandible. The leg bones were crossed and the skull, facing west, lay between the ribs and the pelvic bones.

When the grave contents had been removed, the pair began digging carefully toward the western portion of the cairn. A bone awl was the first item, then three shell beads, two portions of hollowed deer antlers, and two more bone pendants. Darkness again forced cessation of work, and having not yet found the human mandible, they decided to try again later.

On the third day they recovered the missing mandible, over a foot from the rest of the skeleton. Near it were a number of mammal teeth. More bone pendants and worked pieces of stone came to light. Here also they uncovered a small stone pestle and perhaps most significant, a projectile point, along with other artifacts and bones.

Pure chance prompted them to dig a little further west, where they came upon the second skeleton, also complete. This skeleton also faced the west, sitting in almost exactly the same position as the first, and the bones were the same reddish colour.

They placed the long bones and small bones in a box and reburied them, keeping only the artifacts and the skulls. These they took to the river and washed, losing much of the colour in the process.

It is fortunate that Mrs. Wright had the foresight to keep a record of the digging, with accurate sketches of pertinent skeletal positions. (Figs. 2a and 2b). At my request she sent the complete contents of the cairn for preliminary analysis. Following this in 1957 the specimens were sent to the Saskatchewan Museum of Natural History, where Dr. Robert W. Nero was to help Mrs. Wright prepare a report on the cairn material. Dr. Nero later and at my request generously turned the drafting

of this report over to me and promptly shipped the specimens back to me, including his notes.

As best as can be determined or deduced the following describes the nature of the burial and its contents:

NATURE OF INTERMENT

When first discovered, the Bracken Cairn was covered by a pile of field-stones partly overgrown with grass. That artifacts were found near the top would suggest that they were placed over the bodies at the time of burial (Smith. Inst., 1910:361). A thick layer of red ochre was spread over the filled grave, beneath the rocks, and through time the colour has leached down, staining many of the bones and even some of the artifacts. The abundance of ochre on some bones suggests the possibility that the bones were painted **after the flesh had gone**. This in turn suggests a reburial or 'bundle burial,' in which the bones from a previously 'scaffold-buried' body were later gathered and reburied in the cairn.

The position of the bones in a pile substantiates this hypothesis, although the bodies have been buried in a sitting position. Reburial is known to have been a common custom of the Plains tribes (Lowie, 1954:86).

The placement of the mandible apart from the skull suggests to me that the burials took place at different times, and that the mandible was disturbed while the second body or bundle was being placed in position, for here again is a common practice on the Plains, to bury or re-bury the bones of relatives in the same excavation or site (Smith. Inst., 1910: 104).

There is some possibility that the mandible was displaced by burrowing animals, but Mrs. Wright states that the soil around it was just as hard and compact as that in the rest of the grave, and indistinguishable in texture. A burrow of any kind would show traces of soil differences and coloration, and an animal large enough to move a mandible fifteen inches would disturb more than one portion of the burial.

By comparing the Bracken Cairn mode of burial with the above-mentioned Plains customs, I am attempting only to show that such practices

were not necessarily a departure from the norm, and it is not my intention to attempt to identify the Bracken people with any of the later historic tribes. I am merely outlining various burial habits which would seem to explain the obvious questions posed.

HUMAN SKELETAL REMAINS

The two adult skulls are dissimilar, BG-1 having markedly open sutures and a much more globular shape than BG-2, in which the coronal and sagittal sutures are completely closed and the lambdoid and squamous sutures very nearly so. The traits point to a difference in age, and possibly sex, although sex and race have very little or no influence on suture closure (Todd and Lyon, 1954): In the case of the Bracken skulls, age estimations are based on ectocranial fusion, which progresses at a slower rate than endocranial closure, and is therefore not so reliable as an indicator.

Three vault sutures only were considered: sagittal, coronal and lambdoid; and when compared according to the graphs supplied in the reference (Todd and Lyon, 1954), produced the following results:

BG-1		
Suture	Degree of Closure	Estimated Age at Death
Sagittal	1/2	27
Coronal	1/4	26-27
Lambdoid	1/4	27-28
BG-2		
Sagittal	complete	35 up
Coronal	3/4	32
Lambdoid	3/4	36

The man would therefore have been between the ages of 26 to 28 when he died.

The woman's estimated age would appear to be anywhere from 32 to 36 or possibly more. Inasmuch as ectocranial sutures often do not ever completely fuse or close, these figures then only become suggestive.

Contents of the burial lead one to suspect that one of the skulls is that of an adult male, the other an adult female. Some attempts to substantiate this idea were carried out with constant reference to the listed texts (Todd and Lyon, 1954). Following a progressive check list, it is possible to note the differences in bone structure. For instance, BG-1 appears to correspond very closely with the



Fig. 3. Adult skulls from Bracken Cairn. BG-1 (Male) above, BG-2 (female) below.

check points for a male skull. When compared to BG-2, we find the bone in most instances is much heavier, the muscle tugs more prominent, brow ridges and temporal ridges prominent, teeth large. BG-2 contrasts in thickness of bone, prominence of muscle attachments, temporal ridges and general characteristics, the whole structure of the cranium being somewhat smaller and more delicate, although her prominent supra-orbital brow ridges tend to confuse the issue. A possible explanation is that the female Australoid skull often bears brow ridges as prominent or more so than the average male white skull. Both skulls have a cephalic index of less than 75, are both dilochocephalic, or longheaded, and therefore fall into the Australoid category, which would help to explain the brow ridges of the woman.

Comparative measurements are as follows:

Skull	Nasion to Inion	Bi-Stephantic	Extension	Cephalic Index
BG-1	17.8 cm.	10.2 cm.	$\frac{10.2 \times 100}{17.8}$	57.3
BG-2	18.4 cm.	10.4 cm.	$\frac{10.4 \times 100}{18.4}$	56.52

Mandibles—The mandibles of both skulls are striking in appearance, being very large, square jawed and

heavy boned. One mandible (BG-1-A) is heavier and has more prominent muscular attachments. Presumably it is male. From actual physical contact it was found to fit BG-1 better than BG-2; and the other mandible, BG-2-A seems to articulate properly with the female skull.

Teeth—The teeth of both skulls, maxillae and mandibles, are in excellent condition with no cavities evident. The cusps of all teeth have been worn off flat, probably through a diet of gritty foods. Teeth in both skulls meet evenly and squarely. The teeth in skull BG-1 appear appreciably larger than those in skull BG-2.

Infant Skull—A third, fragmentary, skull, separated at the sutures and with the plates badly broken up, is that of an infant. It is not definite where the specimen was found, but several teeth, undoubtedly from this skull, were recovered, along with portions of the cranium and what may be a finger or toe bone.

Long Bones—Evidently when the grave was first opened the skeletons were complete, but on the second excavation, in 1948, most of the long bones were found to be smashed or crushed by the weight of stones upon them. Mrs. Wright did recover some,

however, including a femur, two humeri, several vertebrae and a portion of pelvis. By comparison, the two humeri are quite dissimilar, one being noticeably larger than the other, with more prominent muscle tugs. This tends to differentiate between male and female, but there is no recorded association with the skulls. The pelvis and one humerus are thickly coated with red ochre, suggesting the painting of bones as mentioned above.

OSTEOLOGICAL MATERIAL

Osteological materials other than human, recovered from the grave and identified by Dr. Robert Nero and Bruce A. McCorquodale of the Saskatchewan Museum of Natural History are:

Swift (Kit) Fox—Mainly mandibles and sheared maxillae.

Pronghorn (Antelope)—One horn core and portion of cannon bone.

Deer—One tip of antler, possibly intended or used as flaking tool.

Two burrs from antlers, hollowed out.

Bear—Teeth and portions of maxilla, cut for ornament.

Bird—One large bird bone, unidentified, with small round hole drilled near one end.

Bison—One tooth.

Beaver—Portion of two incisors.

Skunk—Skull (complete).

Metal—Only one piece of metal was found in the burial, that being a small folded copper bead. The copper is probably native and need not suggest White contact.

Shell Material—Most significant of the shell materials are the large gorgets, which signalled the discovery, and three beads. One gorget and one bead are shown in Fig. 1. Similar material has been recovered from a bog near Dundurn, Saskatchewan. (Through personal correspondence with Nero, 1960, it was learned that two gorgets and a projectile point closely comparable with the Bracken material were found in a bog near Dundurn and are now in the Royal Ontario Museum.)

Bone Material—A number of interesting bone artifacts were uncovered in the burial. One appears to be a representation of a bear claw, being tapered to a crescentic shape and flattened on all four surfaces with definite square edges (Fig. 4-C). It is unperforated and shows grinding marks. Many edges are polished from wear. Nero suggests that it

may be a kind of flat awl. This item, cut from a very heavy piece of bone, has taken on a stained ivory coloration.

A group of seven smaller bone objects, obviously pendants, are also carved of heavy bone, pear shaped, with tapered holes drilled through the small end. They are very suggestive of representation of elk teeth, although flattened to a plano-convex section, perhaps owing to the curvature of the original bone from which they were carved. As with the 'bear claw', they exhibit fine scratches of filing or grinding but are well polished on the convex face (Fig. 4-D).

Two badly decomposed pieces of bone may be spatulas or quill flatteners. One (Fig. 4-g) is the tip only of a broad, thin tool, rounded at the end and showing wear. The other is a section of split mammal rib, narrow and flattened on the surface, with the cancellous material removed. Weathering has destroyed any trace of working or wear (Fig. 4-h).

Two burrs from the antlers of deer have been cut short and hollowed out to form small containers. One is shown in Fig. 4-a. They retain no trace of substance to show what they contained, whether paint, grease or artifacts.

Probably the only definitely recognizable bone artifact is an awl cut from a section of heavy bone, well worked to a point and polished, having the same old ivory colouring as the bear claw and pendant (Fig. 4-k).

At least one beaver incisor was recovered, in fragments. It shows much wear at one end, and was used probably more as a chisel than as a graver in the usual manner (Fig. 4-i).

A portion of the maxilla of a bear, with several teeth intact, has been cut and shaped on one side, but no definite use can be established.

Ochre—Hematite or red oxide of iron is present all through the burial. A thick layer of colour is shown in the profile of the excavation and in some places appears to be two or three inches thick. Evidently the hole was filled in above the bodies, and ochre spread over a wide area at the original ground level, after which

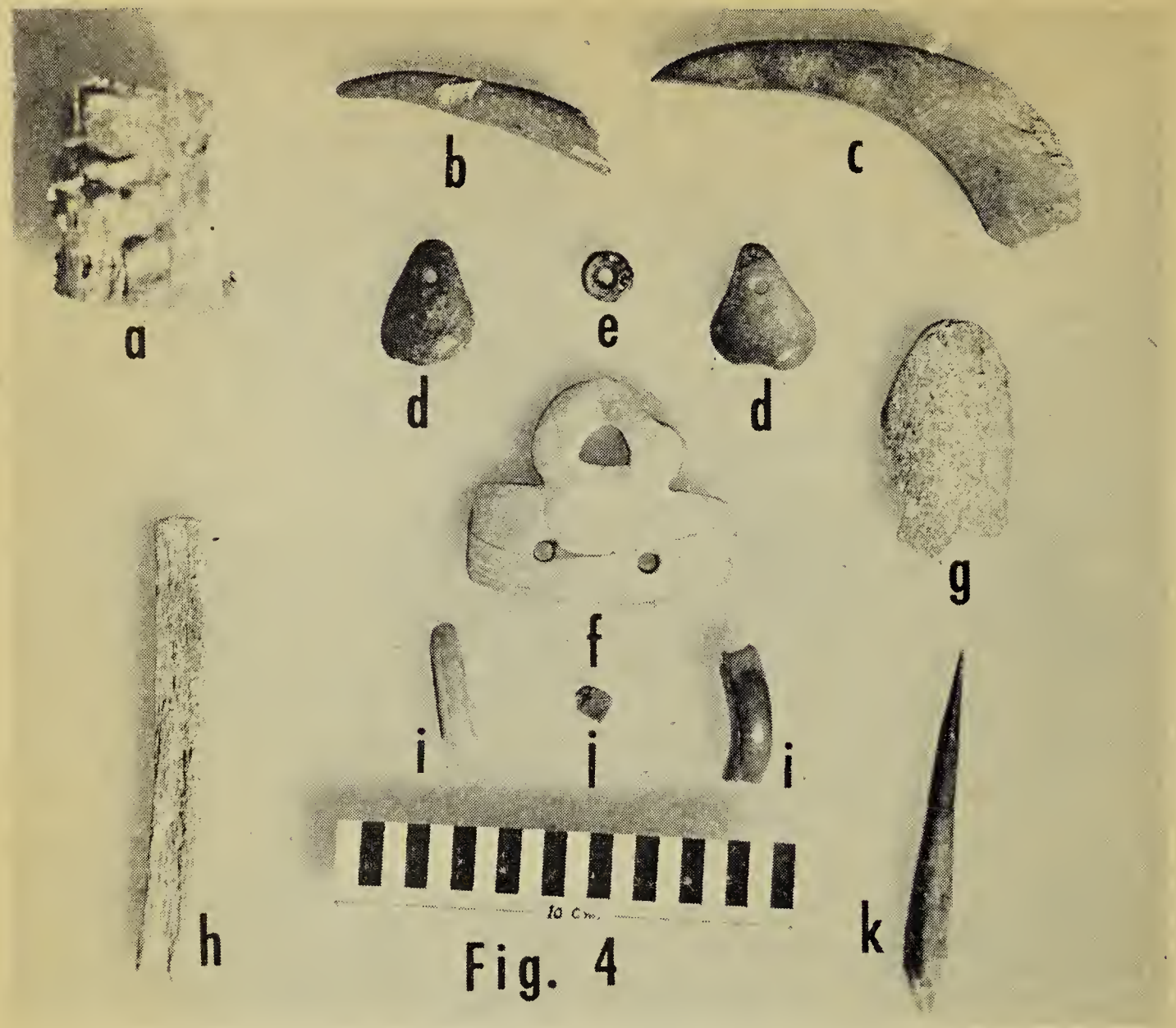


Fig. 4. Shell and bone material from Bracken Cairn.

stones were piled on top. The line of colour extends well past the outline plan of the burial (Shown by dotted lines in Fig. 2). A good deal of colour has leached down to colour the earth and sand around the remains, and was concentrated enough to stain some of the bones and artifacts. Certain parts of the skeletal remains, however, appear to have been coated deliberately with hematite. Large quantities of coloured sand were observed *in situ* and some samples saved for reference and study.

Limonite, or yellow oxide of iron, is present in somewhat smaller quantity. A few small lumps were recovered, but its use in the burial has not been determined.

CHIPPED STONE ARTIFACTS

Projectile points—The only projectile point found with the burial (Fig. 5-a), is a heavy plano-convex

piece, with one slightly barbed shoulder and wide corner notches.

It is made of grey granitic material with poor knapping qualities. The base is deeply convex and ground.

Measurements of the point:

Length	36 mm.
Length of blade	29 mm.
Width at shoulder	22 mm.
Depth of notch	4 mm.
Width of neck	13 mm.
Width of base	17 mm.
Thickness	5 mm.

This point may be favourably compared with Pelican Lake points from the Mortlach site (Wetlaufer, 1956:107), which have been estimated at 800 B.C. However, Forbis points out certain characteristics common to point types from the lower members of the Old Woman's Jump (Forbis,

1959) (Fig. 5-b). The Bracken point appears more closely related to the Old Woman type than Pelican Lake, but these two types are different only in a few respects and are nearly contemporary. The Bracken point could belong to either group, or both.

Even though this point compares favourably with points from the Old Woman's Jump (ca. 1650) (dated by Carbon 14 tests of material from the site), we cannot presume that the burial itself is of a like antiquity on the basis of a single specimen.

Drills—This category is also represented by a single specimen. Made from Knife River flint, the drill measures 3.8 cm. in length, two cm. across the widest part of the base. It is a typical specimen, being well formed, flaked on all faces and edges, with concave body edges and full convex base. The tip is missing (Fig. 6-j).

Scrapers—The collection contains a number of well-made end scrapers, of which five are shown in Fig. 6 (c to g). Two are of fine yellow jasper and two smaller ones of Knife River flint, of which one is well into the process of patination. All five are the so-called 'snub-nosed end scrapers', although one (Fig. 6-c) is somewhat of a departure from the common type, being a large spall worked to a side scraper on the long edges, and an end scraper on one blunt end, in reality a dual purpose tool. All end scrapers show considerable wear on the bit end.

Side scrapers (Fig. 6-a-b-h-i-m) occasionally overlap or become dual purpose tools. Some of the thin unifacially worked flakes have suggestions of fine bifacial retouch in places, as for knives. Here again there is much wear on the edges.

Biface Tools—In the series of seven well-made bifacially worked tools (Fig. 7), two, No. 7-c and No. 7-d take the form of definite ovates, made of red quartzite, and corresponding in shape although varying greatly in size.

Pear-shaped variants of the ovate biface are very thin in comparison to the others (Fig. 7-d, b, g). There are cruder ovates. One is a well shaped blade, possibly unfinished at the narrow end; it has a rough len-

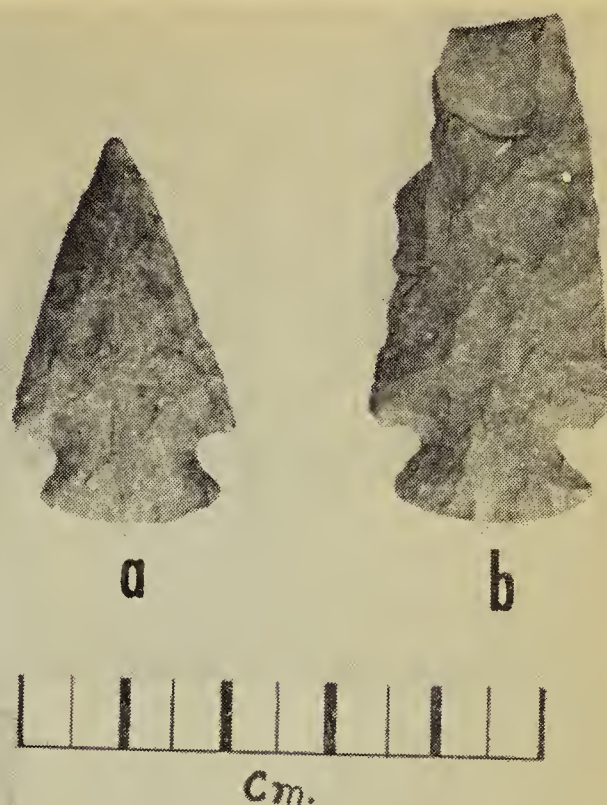


Fig. 5

Fig. 5. Projectile points from Bracken Cairn (left) and from Old Woman's Buffalo Jump (right).

ticular section and takes the form of an elongated ovate (Fig. 7-f).

Note: All of the above bifaces appear to be common in southern Saskatchewan, to judge by the collection made in the Mortlach area by Kenneth Jones. They also correspond to types found in Central Alberta by Hugh Bower of Red Deer.

GROUND STONE ARTIFACTS

The single ground stone artifact is a pestle (not illustrated). It is well polished on the stem and sides of the head, but the face and one side of the head show either deterioration or wear by percussion. Robert Nero and his associates believe that it is made from stalagmitic material.

UNWORKED STONE

The grave contained a number of flakes and chips of various materials which show no working. Material represented include chert, jasper, Knife River flint, quartzite and petrified wood.



Fig. 6. Drills and scrapers from the Bracken Cairn.

SUMMARY

From the evidence studied the following possibilities are suggested:

1. The grave contained the remains of an adult male, an adult female and an infant.
2. The man was buried first. At the time of his death he was about 27 years old. He may have been originally buried on a scaffold or in a tree, or some other form of exposed burial; and at some later time his family gathered his bones, painted them with red ochre and reburied them on the hill, marking the place with a pile of stones.
3. The woman, passing him in age after his death, may have been a relative. She died some time after the age of 36 and was also exposed to the elements, after which her remains in turn were gathered by her family along with those of her child, and taken to the site on the hill, where the grave was opened and a second hole dug close beside the first, the bones placed, and the hole again filled and covered with stones. Token possessions were scattered over the bones on interment.
4. The date of interment may be about the time of Christ, to judge by the projectile point. At any rate the absence of pottery indicates an early date, while the fact that there is no trade metal or glass shows the burial to be at least pre-contact.
5. The similarity of some material from the Bracken Cairn to other complexes in Saskatchewan suggests the possibility that the Bracken Cairn may represent an example of the burial rites of an Archaic culture with affinities with Pelican Lake complex as at Mortlach site (Wettlaufer, 1956) and possibly Long Creek site (Wettlaufer, 1960).



Fig. 7. Biface tools from the Bracken Cairn.

ACKNOWLEDGMENTS

I would like to thank Dr. Robert W. Nero and Bruce A. McCorquodale, Saskatchewan Museum of Natural History, for their co-operation in relaying information and identifying osteological material; Dr. Richard Forbis of the Glenbow Foundation, Calgary, for his encouragement and criticism; and above all, Mrs. Laura Wright of Bracken, for her patience and willing co-operation for supplying the burial material for the project.

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CO-OPERATIVE SPRING MIGRATION STUDY

Observers throughout the continent are again participating in a spring migration study for a selected list of species of birds carried out under the auspices of the U.S. Fish and Wildlife Service. Members of the Society are urged to keep migration dates and submit their records for species listed in the March, 1960, *Blue Jay* (add Tennessee Warbler, Blackpoll Warbler, Bobolink) to C. Stuart Houston, 2401 Hanover Ave., Saskatoon.

LETTERS

GARTER SNAKES

I should like to correct the information given on the Red-sided Garter Snake in a recent article in the **Blue Jay** (18:184). The Red-sided Garter Snake should be referred to as *Thamnophis sirtalis parietalis* since the common name is restricted to this distinct subspecies. Contrary to the information given, it usually has a **yellow** stripe on each side, with **red bars** along each side. This species is best distinguished from the Western Plains Garter Snake (*Thamnophis radix haydeni*) by its yellow mid-dorsal stripe (orange in *Thamnophis radix haydeni*) and the position of the stripe on the side. Counting from the first row of small scales next to the belly scales, this stripe is on the 2nd and 3rd rows in *parietalis* and on the 3rd and 4th rows in *haydeni*. The red bars are also distinctive of *parietalis*. To the distribution of *parietalis* it should be added that it probably covers the central section of the province, and possibly some of the northern sections as well. It has been recorded as far north as Fort Smith in the Northwest Territories (Harper, 1931. *Amphibia of the Athabasca and Great Slave Lakes region. Can. Field-Nat.* 45:68-70). There are comparatively few specimens of this species from Saskatchewan in collections and readers are urged to send specimens to Dr. R. W. Nero at the Saskatchewan Museum of Natural History, Regina, or to myself.—**Francis R. Cook**, Curator of Herpetology, Nat. Museum of Canada, Ottawa.

The **Blue Jay** article on large Garter Snakes prompted me to write. When I saw the large snake at the Museum during the SNHS convention I thought of a very large snake I saw several times during the summer of 1958. I think it would easily have measured as long as the one in the Museum, or even longer, and its body was much thicker. I saw the snake four or five times that summer, as well as one of its moulted skins, but unfortunately I did not measure its length.—**Jack Provick**, Hazelcliffe.

SANDHILL CRANE REFUGES

I read with interest your articles on the Sandhill Crane problem and think the projected Crane refuge at Last Mountain Lake an excellent idea. Once the crane is put on the legal bag list in Canada or the United States it may be seriously reduced in numbers before it is given legal protection again.

Cranes are interesting birds at any time but when seen in large flocks they are spectacular. For many years I watched the annual northward flight of the cranes at Athabasca, Alberta, where I grew up on a homestead in the 1930's. In late April or early May more than 5000 would glide over in large flocks composed of many V's. A few years ago it was my good fortune to see a gathering of 3000 Australian cranes (brolgas) on the Queensland plains. I believe these two wildlife spectacles were the finest I have ever witnessed.—**D. Stirling**, 329 Island Highway, Victoria, B.C.

I wholeheartedly agree with the Saskatchewan Natural History Society's suggestion that a refuge be established at the north end of Last Mountain Lake. Purchasing land where damage caused by cranes is extensive in order to plant lure crops to attract the birds until the farmers have completed harvest operations is one way of preventing damage to the individual farmer. Meanwhile the paying of compensation to farmers suffering losses, although not solving the problem, does help to keep the farmer operating until a solution is found.—**Stanley Zazelenchuk**, Stornoway.

A **Winnipeg Free Press** article by Edythe Humphrey of Nokomis on the Sandhill Cranes study prompted me to write. I hope that land can be purchased at the north end of Last Mountain Lake and planted to crops for the cranes. We definitely need more bird refuges.—**Mrs. B. Robinson**, Brandon, Manitoba.

THE RARE PINNATED GROUSE

Last October as I drove along the highway I saw two birds half hidden in low weeds which struck me as being very much like Prairie Chickens (Pinnated Grouse). They were so near the road that I thought they were practically asking to be shot, so I stopped my car to drive them away, half hoping to see the very scarce Prairie Chicken again. I was very pleased to see that they were indeed two beautifully-barred Prairie Chicken, the square-cut tail and size leaving no doubt at all. It is a number of years since I have seen a Prairie Chicken or Pheasant in this area, but Huns (Gray Partridge) and Sharp-tailed Grouse are seen occasionally.—**John M. Pringle**, Stoughton:

SHORT-TAILED SHREW

One day during December, 1960, when I was checking my traps I came across a little mouse-like animal sitting in the snow and shivering, probably from starvation, for when I put it in my cage later and fed it bread and liver it ate greedily. Gary Anweiler and I later identified it as the Short-tailed Shrew.

In our district this year I have found more Long-tailed Weasels, and some Snowshoe Rabbits. When examining several pellets of the Great Horned Owl recently, I found they contained remains of mice, but no indication of game birds or poultry.—**Victor Schmidt**, Melville.

NODDING THISTLE

Reading through some back issues of the **Blue Jay** I came across the article on Nodding Thistle by J. Boswell Belcher of Dilke (June, 1958). The editor's note requested further reports on new locations for this plant. This summer (1960) while driving north of Anerley, Saskatchewan, I noticed a four-foot specimen growing along the roadside. I saw only one plant, so it must be just getting established there. I have also seen the thistle at Davidson, and along Highway No. 2 north of Findlater this summer.—**Bill Richards**, Saskatoon.

FRIENDS OF THE FARMER

When I lived on the prairies we had ample evidence that the "sea gull" is a true friend to the Western farmer, following the plow ceaselessly and destroying great numbers of grasshoppers and grubs, saving spraying expenses and its doubtful after effects.

One one occasion when plowing summer fallow I noticed a bird make a gallant effort to swallow a gopher and the gull was in serious difficulties. Since that was my last round for the day I did not witness the final act of the tragedy, but as that far end of the furrow was the hunting ground of a really handsome coyote, I fear that they provided him with a two-course meal!—**Malcolm Reidpath**, Cooksville, Ontario.

SASKATCHEWAN NATURAL HISTORY SOCIETY RESEARCH GRANTS FUND

A small fund has been established to assist students and amateur members of the Society to do research in Saskatchewan. Awards up to a maximum of \$100 will be available each year. Awards will be announced at the annual summer meeting in June. Persons who qualify for assistance should make application as soon as possible.

RULES:

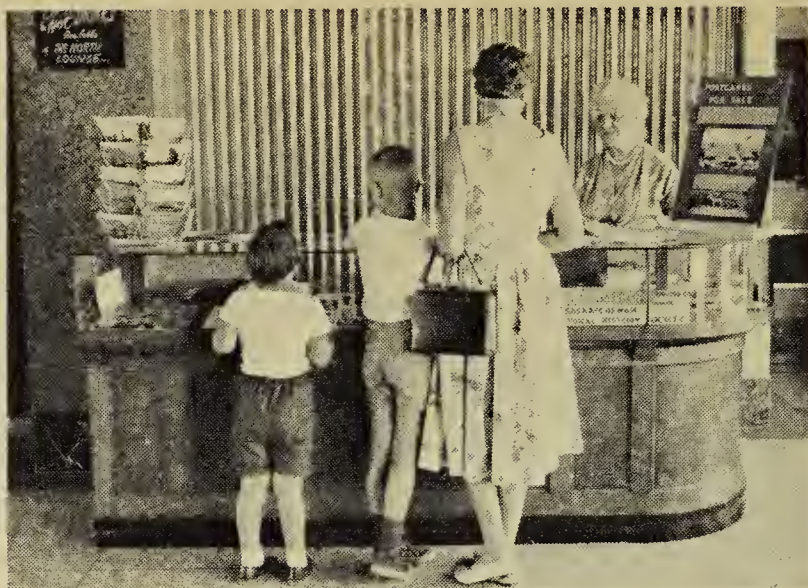
1. Only students or amateurs who are members of the Society and doing or planning research in Saskatchewan will be considered.
2. Applications must be submitted not later than May 1. Applications should include an outline of the study, type of study, area of study, length of study, and equipment to be used (camera, microscope, etc.). Students should give their age and school grade.
3. A brief interim report on the progress of the study must be submitted by August 1, and a fuller progress report or paper by October 1.
4. Only work not previously published will be accepted. The SNHS reserves the right to publish any or all material submitted.

Each applicant will be advised that his application has been received and whether his project is suitable for consideration. This does not mean that the applicant with an acceptable project will necessarily receive assistance as our funds allow us to support only one or two projects each year.

Send applications and requests for further information to:

SNHS RESEARCH GRANTS FUND,
c/o ELMER L. FOX,
3455 RAE STREET, REGINA.

The Blue Jay Bookshop



Saskatchewan Photographic Services

The Saskatchewan Natural History Society's **Blue Jay Book Shop** will be open again this summer with Mrs. Elizabeth (Betty) Cruickshank in charge.

Mrs. Cruickshank says that members of the Society may write to her any time, c/o Blue Jay Book Shop, Saskatchewan Natural History Society, Saskatchewan Museum of Natural History, Regina. All proceeds from sales will go directly to the Society.

She has the following and other books in stock: Peterson's **How to know the Birds** (60¢); Cruickshank's **Pocket Guide to Birds** (60¢); **The Golden Nature Guides** (birds,

rocks and minerals, zoology, reptiles, etc., \$1.35 each); **The Birds of the River** by Houston and Street (\$1.50); Beck's **Mammals of Saskatchewan** (50¢). She will also try to supply other nature books useful in Saskatchewan. The Shop will handle R. T. Peterson's **Western Field Guide to the Birds**—revised to include Saskatchewan birds—(ca. \$6.00, available some time after March). The Shop also handles museum habitat case color transparencies (25¢); bird song recordings; hasti-notes and habitat case postcards. Hasti-notes are available in the two designs—Western Red Lily or Sharp-tailed Grouse—at \$1.00 per dozen.

Annual Summer Meeting, Saskatoon, June 16-18

Friday, June 16

7:00-10:00 p.m.—Registration.

8:00 p.m.—Business Meeting, Programme, Refreshments.

Saturday, June 17

5:00-8:00 a.m.—Optional Early-bird Field Trip; Forestry Farm, Patience Lake, and surrounding prairie.

8:30 a.m.—All cars assemble at the junction of Highways 5 and 27.

8:30-12:00 noon—Motorcade north to Batoche, with stops at Fish Creek (cemetery and battleground) and Gabriel's Ferry.

12:00-1:00 p.m.—Lunch at Batoche (Historical Site). Lunches supplied at cost.

1:00-2:00 p.m.—Crossing the South Saskatchewan River via ferry.

2:00-6:00 p.m.—Field Trips: Ornithology, Botany, Geology, i.e.

—along original Carlton Trail to old Fort Carlton.

—Duck Lake — battleground and marsh.

—Forest Reserve.

6:00 p.m.—Outdoor. Supper at Sandy (Adamson's) Lake, on No. 11 Highway.

8:00 p.m.—Return to Saskatoon.

Sunday, June 18

Morning—Field Trip to Pike Lake Provincial Park, 18 miles south-west of Saskatoon.

Afternoon — Optional trips to Beaver Creek Game Farm and the Western Development Museum.

Accommodation: rooms are available at the School of Agriculture Building, University Campus. Ample parking space. \$3.25 per room—\$2.75 sharing.

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